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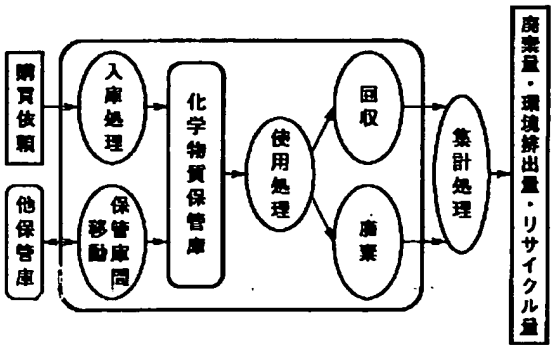
(54)【発明の名称】　化学物質管理システムおよび同化学物質の管理方法並びに記録媒体

(57)【要約】
【課題】自然環境に及ぼす影響や安全性を迅速且つ簡易に調べることができる理想的な化学物質管理システムの実現を図る。
【解決手段】化学物質管理システムは、大気、水、土壌などそれぞれへの環境排出量割合は物質種とその使用用途とによって決定されるという点を利用して、環境排出量割合を、物質種とその使用用途とによって決まるパラメタによってモデル化して管理している。すなわち、データベースを用いて、保有している各化学物質についてその物質種、使用用途、および大気、水、土壌それぞれへの環境排出量割合の管理を行う。集計処理時には、各化学物質の使用量に対してそれら環境排出量割合を乗算するという簡単な集計処理が行われ、これにより大気、水、土壌それぞれへの環境排出量を簡単に求めることができる。



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【特許請求の範囲】

【請求項1】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理システムにおいて、

保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合を管理する物質管理手段と、

前記各化学物質毎にその使用量を管理する手段と、

前記各化学物質毎の使用量とその化学物質の環境排出量割合とに基づいて、環境排出量を集計する集計処理手段とを具備することを特徴とする化学物質管理システム。

【請求項2】　前記物質管理手段は、

前記化学物質毎に、その化学物質種と、使用用途と、少なくとも大気、水、土壌のいずれか一つへの環境排出量割合とを管理するためのフィールドが定義された物質管理テーブルと、使用用途毎に各化学物質の少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を示す用途テーブルとを有し、

前記物質管理テーブルに化学物質種および使用用途が入力されたとき、前記用途テーブルを検索して、前記入力された化学物質種および使用用途に対応する少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を取得し、その取得した環境排出量割合を前記物質管理テーブルに登録することを特徴とする請求項1記載の化学物質管理システム。

【請求項3】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理システムにおいて、

化学物質の入庫量、未使用保有量、未使用廃棄量、使用済回収廃棄量をそれぞれ管理する手段と、

保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、前記入庫量から前記未使用保有量と前記未使用廃棄量と前記使用済回収廃棄量とをそれぞれ減算した残余とに基づいて、環境排出量を集計する集計処理手段とを具備することを特徴とする化学物質管理システム。

【請求項4】　前記集計処理手段は、

前記化学物質の物質種とその使用用途とによって決定される、その化学物質の廃棄物に含まれる不純物係数を用いて、前記使用済回収廃棄量から不純物を除いた実際の廃棄量を算出する手段をさらに含み、

この算出した実際の廃棄量を、前記環境排出量の集計に用いることを特徴とする請求項3記載の化学物質管理システム。

【請求項5】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理方法において、

前記データベースを用いて、保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、その化学物質の使用量とを管理し、

前記各保有化学物質の使用量とその化学物質に対応する環境排出量割合とに基づいて、環境排出量を集計することを特徴とする化学物質管理方法。

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【請求項6】　前記データベースには、前記化学物質毎に、その化学物質種と、使用用途と、少なくとも大気、水、土壌のいずれか一つへの環境排出量割合とを管理するためのフィールドが定義された物質管理テーブルと、使用用途毎に各化学物質の少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を示す用途テーブルとが設けられており、

前記物質管理テーブルに化学物質種および使用用途が入力されたとき、前記用途テーブルを検索して、前記入力された化学物質種および使用用途に対応する少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を取得し、その取得した環境排出量割合を前記物質管理テーブルに登録することを特徴とする請求項5記載の化学物質管理方法。

【請求項7】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理方法において、

前記データベースを用いて、化学物質の入庫量、未使用保有量、未使用廃棄量、使用済回収廃棄量をそれぞれ管理し、

保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、前記入庫量から前記未使用保有量と前記未使用廃棄量と前記使用済回収廃棄量とをそれぞれ減算した残余とに基づいて、環境排出量を集計することを特徴とする化学物質管理方法。

【請求項8】　前記化学物質の物質種とその使用用途とによって決定される、その化学物質の廃棄物に含まれる不純物係数を用いて、前記使用済回収廃棄量から不純物を除いた実際の廃棄量を算出し、

この算出した実際の廃棄量を、前記環境排出量の集計に用いることを特徴とする請求項7記載の化学物質管理方法。

【請求項9】　データベースを用いて化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理するコンピュータプログラムが記録された記録媒体において、

前記コンピュータプログラムは、

前記データベースを用いて、保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、その化学物質の使用量とを管理する手順と、

前記各保有化学物質の使用量とその化学物質に対応する環境排出量割合とに基づいて、環境排出量を集計する集計処理手順とを具備することを特徴とする記録媒体。

【請求項10】　前記データベースには、前記化学物質毎に、その化学物質種と、使用用途と、少なくとも大気、水、土壌のいずれか一つへの環境排出量割合とを管理するためのフィールドが定義された物質管理テーブルと、使用用途毎に各化学物質の少なくとも大気、水、土

壌のいずれか一つへの環境排出量割合を示す用途テーブルとが設けられており、
前記コンピュータプログラムは、
前記物質管理テーブルに化学物質種および使用用途が入力されたとき、前記用途テーブルを検索して、前記入力された化学物質種および使用用途に対応する少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を取得し、その取得した環境排出量割合を前記物質管理テーブルに登録する手順をさらに具備することを特徴とする請求項９記載の記録媒体。

【請求項１１】　データベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理するコンピュータプログラムが記録された記録媒体において、
前記コンピュータプログラムは、
前記データベースを用いて、化学物質の入庫量、未使用保有量、未使用廃棄量、使用済回収廃棄量をそれぞれ管理する手順と、
保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、前記入庫量から前記未使用保有量と前記未使用廃棄量と前記使用済回収廃棄量とをそれぞれ減算した残余とに基づいて、環境排出量を集計する手順とを具備することを特徴とする記録媒体。

【請求項１２】　前記コンピュータプログラムは、
前記化学物質の物質種とその使用用途とによって決定される、その化学物質の廃棄物に含まれる不純物係数を用いて、前記使用済回収廃棄量から不純物を除いた実際の廃棄量を算出する手順をさらに具備し、
この算出した実際の廃棄量を、前記環境排出量の集計に用いることを特徴とする請求項１１記載の記録媒体。

【請求項１３】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、
保有している化学物質毎に、成分物質、およびその成分物質の含有量を管理するための物質管理テーブルと、
前記物質管理テーブルに対して混合物質に関する情報が入力されたとき、各混合物質毎にその成分物質と含有量とが定義されている成分情報を検索して、前記入力された混合物質に対応する成分物質および含有量を前記物質管理テーブルに登録する手段とを具備し、
保有化学物質を純物質単位で管理できるように構成されていることを特徴とする化学物質管理システム。

【請求項１４】　前記各化学物質毎にその使用量を管理する手段と、
前記各化学物質の使用量とその化学物質に含まれる成分物質およびその含有量とに基づいて純物質単位で使用量を算出し、その算出した使用量、および各純物質の種類とその使用用途とによって予め決定される少なくとも大気、水、土壌のいずれか一つへの環境排出量割合に基づいて、少なくとも大気、水、土壌のいずれか一つへの環境排出量を集計する集計処理手段とをさらに具備することを特徴とする請求項１３記載の化学物質管理システム。

【請求項１５】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理方法において、
前記データベースの物質管理テーブルを用いて、保有している化学物質毎に、成分物質、およびその成分物質の含有量を管理し、
前記物質管理テーブルに対して混合物質に関する情報が入力されたとき、各混合物質毎にその成分物質と含有量とが定義されている成分情報を検索して、前記入力された混合物質に対応する成分物質および含有量を前記物質管理テーブルに登録し、
前記物質管理テーブルを用いて、前記保有化学物質を純物質単位で管理することを特徴とする化学物質管理方法。

【請求項１６】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、
保有している化学物質毎に、その保有量と、その化学物質の取扱いを規制している法規で規定された最大保有量を管理する手段と、
前記法規で規定された最大保有量に対する規制物質の保有量の割合を算出し、その算出結果を安全指数として出力する安全指数算出手段とを具備することを特徴とする化学物質管理システム。

【請求項１７】　前記安全指数算出手段は、
安全指数の調査対象となる保管庫で保管されている化学物質毎に、最大保有量に対する保有量の割合をその物質の安全指数として算出する手段と、
前記調査対象の保管庫で管理されている化学物質それぞれに対応する安全指数を累積し、その累積結果を前記調査対象の保管庫の安全指数として出力する手段とを具備することを特徴とする請求項１６記載の化学物質管理システム。

【請求項１８】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理方法において、
前記データベースを用いて、保有している化学物質毎に、その保有量と、その化学物質の取扱いを規制している法規で規定された最大保有量を管理し、
前記法規で規定された最大保有量に対する規制物質の保有量の割合を算出し、その算出結果を安全指数として出力することを特徴とする化学物質管理方法。

【請求項１９】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、
保有している化学物質毎に、少なくともその保有量または使用量を管理する手段と、

化学物質毎にその化学物質が及ぼす環境に対する影響の度合いに応じて予め決められた重み係数と、前記保有化学物質それぞれの少なくとも保有量または使用量とに基づいて、前記保有化学物質が及ぼす環境への影響度を算出し、その算出結果を前記保有化学物質の環境負荷指数として出力する環境負荷指数算出手段とを具備することを特徴とする化学物質管理システム。

【請求項２０】　前記環境負荷指数算出手段は、

環境負荷指数の調査対象となる保管庫で保管されている化学物質毎に、少なくとも保有量または使用量と、重み係数との積をその物質の環境負荷指数として算出する手段と、

前記調査対象の保管庫で管理されている化学物質それぞれに対応する環境負荷指数を累積し、その累積結果を前記調査対象の保管庫の環境負荷指数として出力する手段とを具備することを特徴とする請求項１９記載の化学物質管理システム。

【請求項２１】　コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理方法において、

前記データベースを用いて、保有している化学物質毎に、少なくともその保有量または使用量を管理し、

化学物質毎にその化学物質が及ぼす環境に対する影響の度合いに応じて予め決められた重み係数と、前記保有化学物質それぞれの少なくとも保有量または使用量とに基づいて、前記保有化学物質が及ぼす環境への影響度を算出し、その算出結果を前記保有化学物質の環境負荷指数として出力することを特徴とする化学物質管理方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、薬品、ガスなどの化学物質を管理するための化学物質管理システムおよび同化学物質の管理方法並びに記録媒体に関し、特に自然環境に対する影響や安全性を管理するための機能を有する化学物質管理システムおよび同化学物質の管理方法並びに記録媒体に関する。

【０００２】

【従来の技術】近年、地球環境問題への社会的な高まりにより、薬品、ガスなどのさまざまな化学物質についての安全管理が見直されている。そこで、日本においても、環境汚染物質排出・移動登録制度（ＰＲＴＲ：Ｐｏｌｌｕｔａｎｔ　Ｒｅｌｅａｓｅａｎｄ　Ｔｒａｎｓｆｅｒ　Ｒｅｇｉｓｔｅｒ）の法制化作業が進められている。ＰＲＴＲは、企業が事業所等で使用している化学物質を自ら調べ、それを行政機関が公表する制度である。大気や河川など自然環境に排出する化学物質の量や、廃棄物として事業所外に移動する量などが公表対象となる。

【０００３】しかし、現状では、企業で用いられている化学物質管理のためのシステムは在庫管理を主目的としたものが多く、例えば、紙によって規制対象物質の在庫量調査を事情所内の部所毎におこない、それらのデータを人手によって収集後、コンピュータに入力するといった簡便なものがほとんどである。また、化学物質は通常は薬品名等で購入することが多いため、その管理単位も薬品名単位となっており、混合物についてはその成分物質単位での管理は行われていないことが多い。このため、現状のシステムでは、自然環境に排出する化学物質の量を正確に調べることは実際上困難である。

【０００４】また、現状では、企業が事業所等で保有している化学物質の安全性や、その保有化学物質による環境負荷などを統計的に調べるための仕組みがないため、管理者の経験などによる曖昧な指標に基づく安全管理しか行うことができなかった。

【発明が解決しようとする課題】上述のように、従来のシステムでは、自然環境に及ぼす影響や安全性などを統計的に算出するための機能が設けられておらず、自然環境に排出する化学物質の量や、環境負荷、安全性などを正確に管理することは困難であった。特に、少量多品種の化学物質を扱う、企業の研究所や大学等の研究機関においては、管理対象のデータの量も膨大となり、その管理には多くの労力が必要となる。

【０００５】本発明はこのような点に鑑みてなされたものであり、自然環境に及ぼす影響や安全性を迅速且つ簡易に調べることができる理想的な化学物質管理システムおよび同化学物質の管理方法並びに記録媒体を提供することを目的とする。

【０００６】

【課題を解決するための手段】上述の課題を解決するため、本発明は、コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理システムにおいて、保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合を管理する物質管理手段と、前記各化学物質毎にその使用量を管理する手段と、前記各化学物質毎の使用量とその化学物質の環境排出量割合とに基づいて、環境排出量を集計する集計処理手段とを具備することを特徴とする。

【０００７】本発明は、化学物質毎の環境排出量割合（例えば、大気、水、土壌などへの環境排出量割合）は所定の条件によって予め決定される条件、例えば物質種とその使用用途とによって決定される点に着眼し、環境排出量割合を、物質種とその使用用途とによって決まるパラメタによってモデル化して管理している。このように、物質種とその使用用途とによって決定される大気、水、土壌などへの環境排出量割合を物質毎に管理しておけば、あとは、各物質の使用量にそれら環境排出量割合を乗算するという簡単な集計処理を行うだけで、大気、水、土壌などへの環境排出量を容易に求めることができる。

【0008】また、データベースには、化学物質種と、使用用途と、少なくとも大気、水、土壌のいずれか一つへの環境排出量割合とを管理するためのフィールドが定義された物質管理テーブルと、使用用途毎に各化学物質の少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を示す用途テーブルとを設けておき、前記物質管理テーブルに化学物質種および使用用途が入力されたとき、前記用途テーブルを検索して、前記入力された化学物質種および使用用途に対応する少なくとも大気、水、土壌のいずれか一つへの環境排出量割合を取得し、その取得した環境排出量割合を前記物質管理テーブルに登録するように構成することが好ましい。

【0009】これにより、物質管理テーブルへの環境排出量割合の入力の自動化を図ることが出来るので、物質種と使用用途を入力するだけで、物質管理テーブル上の必要なパラメータを揃えることが可能となる。よって、少量多品種の化学物質を、様々な用途で扱う研究機関等においても、入力作業、および環境排出量算出のための集計処理を効率良く行うことができる。

【0010】もとろん環境排出量割合は、データベース上でデータ登録時にデフォルト値として決定しても良いし、随時データ入力時に各種状況に応じて修正を行うことができるようにしてもよい。

【0011】また、本発明は、コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などの少なくともいずれかを管理する化学物質管理システムにおいて、化学物質の入庫量、未使用保有量、未使用廃棄量、使用済回収廃棄量をそれぞれ管理する手段と、保有している化学物質毎に所定の条件に応じて予め決定される環境排出量割合と、前記入庫量から前記未使用保有量と前記未使用廃棄量と前記使用済回収廃棄量とをそれぞれ減算した残余とに基づいて、環境排出量を集計する集計処理手段とを具備することを特徴とする。

【0012】化学物質の使用用途が予め定められた工場等においては、大気、水、土壌などへの環境排出量割合が化学物質毎に予め決定できる。このため、化学物質毎にその用途や環境排出量割合をテーブルで管理せずとも、入庫量、未使用保有量、未使用廃棄量、使用済回収廃棄量といった、量の管理が明確に行えるものだけ管理を行えば、あとは入庫量からそれらを減算した量を求め、それに大気、水、土壌などへの環境排出量割合を乗算することで環境排出量を集計することができる。

【0013】この場合、集計処理手段には、前記化学物質の物質種とその使用用途とによって決定される、その化学物質の廃棄物に含まれる不純物係数を用いて、前記使用済回収廃棄量から不純物を除いた実際の廃棄量を算出する手段をさらに設け、この算出した実際の廃棄量を、前記環境排出量の集計に用いることが好ましい。このように化学物質の廃棄物に含まれている不純物の存在を考慮して環境排出量の計算を行うことにより、より正確な環境排出量を求めることができる。

【0014】また、本発明は、コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、保有している化学物質毎に、成分物質、およびその成分物質の含有量を管理するための物質管理テーブルと、前記物質管理テーブルに対して混合物質に関する情報が入力されたとき、各混合物質毎にその成分物質と含有量とが定義されている成分情報を検索して、前記入力された混合物質に対応する成分物質および含有量を前記物質管理テーブルに登録する手段とを具備し、保有化学物質を純物質単位で管理できるように構成されていることを特徴とする。

【0015】このように、混合物質についてはその成分物質と含有量を物質管理テーブルに自動登録することにより、純物質単位での管理を容易に行うことができるようになり、純物質単位で環境排出量の集計等を行うことが可能となる。

【0016】また、本発明は、コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、保有している化学物質毎に、その保有量と、その化学物質の取扱いを規制している法規で規定された最大保有量を管理する手段と、前記法規で規定された最大保有量に対する規制物質の保有量の割合を算出し、その算出結果を安全指数として出力する安全指数算出手段とを具備することを特徴とする。

【0017】本発明では、安全性の度合いを表す安全指数を、化学物質の取扱いを規制している消防法などの法規で指定された最大保有量に対する保有量の割合によってモデル化しており、これにより、化学物質を保管するための保管庫などの安全指数を計算によって統計的に求めることが可能となる。

【0018】また、一般に、法規で規定された最大保有量の値は化学物質毎に異なっているので、安全指数算出手段は、安全指数の調査対象となる保管庫で保管されている化学物質毎に、その化学物質の取扱いを規制している法規で規定された最大保有量に対する保有量の割合をその物質の安全指数として算出する手段と、前記調査対象の保管庫で管理されている化学物質それぞれに対応する安全指数を累積し、その累積結果を前記調査対象の保管庫の安全指数として出力する手段とによって実現することが好ましい。これにより、保管庫に多品種の物質が保有されている場合でも、その保管庫の安全度を的確に把握することが可能となる。

【0019】また、本発明は、コンピュータのデータベースを用いて、化学物質の入庫、使用、移動、廃棄などを管理する化学物質管理システムにおいて、保有している化学物質毎に、少なくともその保有量または使用量を管理する手段と、化学物質毎にその化学物質が及ぼす環境に対する影響の度合いに応じて予め決められた重み係

数と、前記保有化学物質それぞれの少なくとも保有量または使用量とに基づいて、前記保有化学物質が及ぼす環境への影響度を算出し、その算出結果を前記保有化学物質の環境負荷指数として出力する環境負荷指数算出手段とを具備することを特徴とする。

【0020】本発明では、各化学物質の環境負荷指数を、化学物質の少なくとも保有量または使用量とその化学物質に対応する重み係数とを用いてモデル化しており、環境に対する影響の大きい化学物質ほどその重み係数の値は大きくなる。このように重み係数を用いたモデル化により、少なくとも保有量または使用量と重み係数との積を物質毎に累積するといった簡単な計算を行うだけで、環境負荷を的確に把握することが可能となる。

【0021】

【発明の実施の形態】以下、図面を参照して本発明の実施形態を説明する。

【0022】［第1実施形態］

（システム構成）図1には、本発明の第1実施形態に係る化学物質管理システムの構成が示されている。この化学物質管理システムはコンピュータのデータベースを用いて化学物質の入庫、使用、移動、廃棄などを管理するためのものであり、クライアント／サーバモデルのリレーショナルデータベースシステムを基に構築されている。このシステムには、主管元であるセンターの管理者が使用するセンター管理用のアプリケーションプログラム（センター管理ソフト）11と、各部所の薬品使用者が使用するユーザ管理用のアプリケーション（ユーザ管理用ソフト）12とによって実現されている。センター管理ソフト11が実行されるセンター側のクライアントコンピュータと、ユーザ管理用ソフト12が実行される各部所のクライアントコンピュータは、ネットワークを介して接続されており、各部所から得られたデータ（薬品データ）がセンター管理ソフト11にて管理される。すなわち、使用した化学物質を管理するためのデータ入力等はユーザ管理用ソフト12によって薬品使用者自らが行い、センター側では、センター管理ソフト11を用いて、それら入力データを元に入庫、使用、廃棄、移動等の履歴管理や、集計、報告書の作成などが行われる。なお、集計は別途、サーバコンピュータでバッチプログラムにより行うようにしても良い。また、センター管理ソフト11で管理されるデータベースの内容は、ユーザ管理用ソフト12から参照することができる。ユーザ管理用ソフト12は、基本的にはコンピュータネットワークにオンライン接続された状態での使用を前提としているが、データベースの内容の一部を各部所のコンピュータのローカルストレージにキャッシングする機能や、各部所のコンピュータとセンターのサーバコンピュータとの間のデータ同期機能により、ユーザ管理用ソフト12はオフライン状態で使用することもできる。

【0023】センター管理ソフト11の主な管理機能は、

・物質コード、保管庫コードなどの管理コードの管理（新規登録、変更、削除）
・化学物質の現在の保有量の把握
・各ユーザの化学物質の使用、廃棄、移動の履歴管理
・化学物質の購入履歴管理
・報告資料の作成

である。

【0024】ユーザ管理用ソフト12の主な管理機能は、

・化学物質の使用量、廃棄量の管理
・化学物質の保管庫間の移動管理（化学物質払い出しを含む）
・購入薬品の保管庫への入庫管理
・部所管理物質の登録
・各保管庫の消防法管理
・保管庫の棚卸し管理（保管庫管理者のみ）
・回収物質一時保管庫の回収管理（回収物質一時保管庫管理者のみ）

である。

【0025】また、本化学物質管理システムは物質購入のために資材管理部所等で管理運営される購買依頼システム13との連携により、

・未登録化学物質の購入規制（上長の承認が必要）
・化学物質の購入、受入情報の入手

を行うことができる。

【0026】（機能）図2には、本化学物質管理システムの機能構成が概念的に示されている。

【0027】（1）入庫処理

入庫を管理するための入庫処理は、手配依頼システム13に対する購入依頼を得て購入された薬品やガス等の化学物質を該当する部所の化学物質保管庫に保管する時に必要となるデータベース操作である。購入依頼された化学物質が入荷されたことは、入荷データにより手配依頼システム13からユーザ管理用ソフト12に通知される。ユーザ管理用ソフト12により、入庫した化学物質名やその入庫量、入庫日、入庫者などの情報をデータベースに入力するための画面（入庫物質登録フォーム）が提供され、その画面上でユーザによる入力処理が行われる。この入庫物質登録フォームの画面例を図3に示す。各フィールドの意味は以下の通りである。

【0028】

<依頼番号>：手配依頼時の依頼番号
<手配日>：手配した日付
<受入日>：受入した日付
<入庫物質名>：手配依頼した化学物質名
<発注数量>：手配依頼で発注した量
<単位>：手配依頼時に指定した単位
<入庫部所>：入庫する保管庫のある部所を選択
<保管庫>：入庫する保管庫を選択

<管理者>：選択した保管庫の管理者名
<ＴＥＬ>：選択した保管庫の管理者の内線番号
<入庫日>：物質を保管庫に登録した日付（通常は登録した日）
<消防法係数>：選択した保管庫の消防法係数を表示する。消防法係数は、選択した保管庫の、消防法で規制される最大保有量に対する割合を示すパラメタであり、その詳細は後述する。
【００２９】<物質形状>：固体、液体、ガスなどの物質管理の形態を選択する
<容器容量>：容器の容量で物質を管理する必要がある場合はこちらのラジオボタンを選択し、容量を入力する。
【００３０】<単位>：容器容量で管理を行う場合は容量単位を選択する
<本数>：容器容量で管理を行う場合は容器の本数を入力する。容器容量×本数が入庫量となる
<入庫量>：容器容量で管理しない場合はこちらのラジオボタンを選択し、入庫量を入力する
<単位>：入庫量の単位（ｍｌ，ｌ，ｇ，ｋｇ，Ｎｍ^3）
<比重>：選択した物質の比重。表示されている単位に合うように単位変換するために用いられる
<管理単位>：個人利用で物質を登録する場合、物質の責任者を明確にする場合はチェックする
たとえば、５００ｍｌ瓶で３本のエタノールを入荷した場合、容器容量＝５００ｍｌ、本数＝３という形式で入荷量を入力することもできるが、このような容器容量単位ではなく、入庫量＝１．５１という形式で入力したり、入庫量＝１．３５ｋｇという形式で入力することもできる。本システムには単位の自動変換機能が設けられており、どのような単位で入力されても、その単位量は比重値などを用いて他の単位に自動変換される。これにより、入力された単位の種類によらず、例えばｋｇ，Ｎｍ^{3}といったデフォルトの単位量での管理を行うことができる。
【００３１】（２）保管庫間移動処理
異なる化学物質保管庫間で化学物質の移動が行われた場合には、移動された物質名や、移動量、移動日時、移動先保管庫名などの情報をデータベースに入力するための画面（移動物質登録フォーム）がユーザ管理用ソフト１２によって提供され、その画面上でユーザによる入力処理が行われる。この移動物質登録フォームの画面例を図４に示す。各フィールドの意味は以下の通りである。
【００３２】
<移動量>：物質の移動量を入力する
<単位>：<移動量>の単位を選択する
<移動日>：物質を移動した日付をスピンボタンで決める
<入庫部所名>：移動先の入庫する<保管庫>がある部所を選択する
<入庫保管庫>：<入庫部所>に登録してある保管庫から入庫する保管庫を選択する
<管理者>：選択された保管庫の管理者名
<ＴＥＬ>：選択された保管庫の管理者の内線番号
<消防法係数>：<入庫保管庫>の消防法係数の合計を表示する
（３）使用処理
化学物質保管庫で保有している化学物質を使用した場合には、実際に使用した使用量などの情報を入力する処理がユーザ管理用ソフト１２により提供される画面（使用物質登録フォーム）を用いて行われる。この処理により使用履歴が残る。保有物質一覧表示画面から使用する物質を選択すると、使用物質登録フォームが画面表示され、その画面上で使用量などの情報の入力が行われる。使用物質登録フォームの画面例を図５に示す。各フィールドの意味は以下の通りである。
【００３３】<使用量>：物質の使用量を入力する。
【００３４】
<単位>：<使用量>の単位を選択する
<使用日>：物質を使用した日付をスピンボタンで設定する
<回収物質一時保管庫管理>：回収物質一時保管庫管理の有無をラジオボタンで選択する
“無”…回収物質管理をおこなわない
“有”…回収物質管理をおこなう
<使用形態>：<回収物質管理>が“有”の場合、物質の使用形態を選択する
“全量廃棄”…使用後すぐ指定回収物質一時保管庫へ廃棄（一時保管）する
“継続使用”…使用中物質として扱う
<回収物質一時保管庫>：<使用形態>が“全量廃棄”の場合、廃棄する回収物質一時保管庫を選択する<消防法係数>：<回収物質一時保管庫>の消防法係数の合計を表示する
<廃棄容器>：<使用形態>が“全量廃棄”の場合、廃棄する容器などのコメントを入力する
なお、回収物質一時保管庫は、保管庫の一形態、つまり廃棄物質専用の保管庫である。
【００３５】（４）回収・廃棄処理
使用後の化学物質は、リサイクルのために回収されるものと、回収物質一時保管庫に移動されて廃棄されるものとがあるが、それぞれその回収量の入力や廃棄量の入力といった処理（回収処理、廃棄処理）がユーザ管理用ソフト１２によって提供される画面を用いて行われる。廃棄処理では、使用中物質の一覧表示画面から廃棄物質が選択されると、図６のような廃棄物質登録フォームの画面が表示され、その画面上で廃棄量などの情報が入力される。この廃棄物質登録フォームの画面例を図６に示す。各フィールドの意味は以下の通りである。

【００３６】
＜廃棄量＞：物質の廃棄量を入力する
＜単位＞：＜廃棄量＞の単位を選択する
＜使用日＞：物質を使用した日付をスピンボタンで設定する（通常は当日の日付）
＜回収物質一時保管庫管理＞：回収物質一時保管庫管理の有無をラジオボタンで選択する
“無”…回収物質管理をおこなわない
“有”…回収物質管理をおこなう
＜使用形態＞：＜回収物質管理＞が“有”の場合、物質の使用形態を選択する
“全量廃棄”…使用後すぐ指定回収物質一時保管庫へ廃棄（一時保管）する
“継続使用”…使用中物質として扱う
＜回収物質一時保管庫＞：＜使用形態＞が“全量廃棄”の場合、廃棄する回収物質一時保管庫を選択する
＜消防法係数＞：＜回収物質一時保管庫＞の消防法係数の合計を表示する
＜廃棄容器＞：＜使用形態＞が“全量廃棄”の場合、廃棄する容器などのコメントを入力する
（５）集計処理
集計処理は、データベース上のデータを用いて化学物質の廃棄量、環境排出量、リサイクル量などに関する情報を集計して、その報告書を作成するための処理であり、センター管理ソフト１１にて行われる。環境排出量は、化学物質の使用により自然環境へ排出された化学物質量を示すものであり、大気、水、土壌それぞれへの排出量が集計により求められる。
【００３７】（管理量の定義）次に、図７を参照して、本化学物質管理システムにおける化学物質の管理量の定義について説明する。
【００３８】・入庫量
納品された化学物質を化学物質保管庫に入庫した量を示す。
【００３９】・保有量
化学物質保管庫に保有している化学物質の量を示す。
【００４０】・使用量
保有化学物質を使用した量を示す。この使用量は、保管庫で管理されている薬品容器から取り出した量であり、廃棄量と環境排出量とリサイクル量と化学変化量と搬出量との和に相当する。環境排出量は前述したように大気、水、土壌などへ廃棄される量であり、この量は、保有化学物質の使用段階で排出される量がほとんどである。保有化学物質の使用によって製品が製造された場合にはその製品自体に含有される量も含まれる。
【００４１】・搬出量
保有化学物質の使用によって製品が製造された場合に、その製品自体に含有されて製造現場から外へ搬出される量を示す。
【００４２】・廃棄量
化学物質を回収物質一時保管庫に廃棄した量。回収物質一時保管庫の化学物質は、廃溶剤として回収されるもの、排水処理場へ送られるもの、不要薬品（廃薬品）として回収されるものがある。
【００４３】・移動量
移動量には移動出庫量と移動入庫量とがある。移動出庫量は化学物質の保管庫間移動によって移動元から出庫した量を示し、移動入庫量は化学物質の保管庫間移動によって移動先に入庫した量を示す。
【００４４】（管理種別）図８は本化学物質管理システムにおける化学物質の管理種別を示す図である。
【００４５】図示のように、化学物質は、センター管理物質と、部所管理物質とに分けて管理される。
【００４６】・センター管理物質
センターで登録されている化学物質で、センターはこの物質のみの管理をおこなう。
【００４７】・部所管理物質
センター管理物質を精製したり混合したり、またサンプルとして入手した物質など、センター登録されていない化学物質を登録部所独自で管理をおこなう物質。この物質は登録した部所でのみ管理をおこない、センターでは管理しない。
【００４８】例えば、化学物質ＡとＢを混合することにより、その混合物として、センター登録されていない中間生成物Ｃが生成された場合には、その中間生成物Ｃについては部所管理が行われ、その中間生成物Ｃの成分物質である化学物質ＡとＢについては、センターで管理される。
【００４９】（管理単位）図９は本化学物質管理システムにおける化学物質の管理単位を説明するための図である。
【００５０】本化学物質管理システムでは、保有化学物質毎に固有の物質コードが割り当てられ、その物質コード単位で保有化学物質が管理される。管理対象の化学物質の例を以下に示す。
【００５１】１）薬品
試薬全般
２）工業薬品、化学材料
蛍光体、蒸留水、半導体薬品、工業用薬品、接着剤、接着液、ダストクリーン、エッチング薬品、その他化成品、メッキ液など
３）ガス
ヘリウム、窒素、水素、酸素、アルゴン、半導体ガス、アセチレン、アンモニア、亜酸化窒素、等各種ガス、液体物
また、保有化学物質については、容器容量単位、入庫者単位での管理も行われる。
【００５２】・容器容量単位管理；保管庫に入庫している容器の容量単位で管理する。
【００５３】・入庫者単位管理：保管庫に入庫した入庫

者と容器容量の単位で管理する。

【0054】これら管理する単位は、前述したように、化学物質の入庫登録時にいずれかを選択して物質毎に設定することができる。

【0055】（環境排出量管理）：第1の例（使用量を基準とした例）

次に、本実施形態の重要な特徴の一つである環境排出量管理のための仕組みについて説明する。

【0056】まず、第1の例として化学物質の使用量を基準とした環境排出量管理の基本原理について説明する。

【0057】本実施形態では、化学物質毎の環境排出量割合、例えば、大気、水、土壌などそれぞれへの環境排出量割合は例えば物質種とその使用用途とによって決定される（所定の条件によって予め決定される）という点を利用して、環境排出量割合を、物質種とその使用用途とによって決まるパラメタによってモデル化して管理している。すなわち、データベースを用いて、保有している各化学物質についてその物質種（物質名、物質コード、などの物質そのものを示すパラメタ）、使用用途、および大気、水、土壌などそれぞれへの環境排出量割合の管理を行う。

【0058】このように、物質種とその使用用途とによって決定される大気、水、土壌などそれぞれへの環境排出量割合を管理しておけば、あとは、各化学物質の使用量に対してそれら環境排出量割合を乗算するという簡単な集計処理を行うだけで、大気、水、土壌などそれぞれへの環境排出量を簡単に求めることができる。以下、この仕組みを実現するための好適な具体例について説明する。

【0059】（保有物質管理テーブル）図10には、各部所の保管庫にある化学物質の保有状況を管理するための保有物質管理テーブルのフィールド構成が示されている。この保有物質管理テーブルは、保有している各化学物質についてその物質種（物質名、物質コード、などの物質そのものを示すパラメタ）、使用用途（使用用途としては、洗浄などの純粋用途の他に、例えば使用環境として温度、圧力などの条件も含む）、および大気、水、土壌などそれぞれへの環境排出量割合等を、時間的（期間）、空間的（部所単位、保管庫単位、全部所、全保管庫など）に管理するために用いられるものであり、リレーショナルデータベースを構成する複数のテーブルの1つである。保有している各化学物質毎に1レコード（1行）が割り当てられ、各レコードには図示のようなフィールドが定義されている。ここでは、代表的な幾つかのフィールドについてその説明を行う。

【0060】<保管庫コード>：該当する化学物質を保有している保管庫の固有コードを示す。保管庫コードは、保管庫の所在を示す建屋番号、部屋番号と、保管庫番号などから構成される。この<保管庫コード>フィールドにより、1部所に複数の保管庫が存在する場合にも、その保管庫単位で環境に対する影響や安全性などを管理することが可能となる。

【0061】<物質コード>：各化学物質毎に割り当てられた固有の物質コード

<サブ番号>：同一物質種で物質名が異なる化学物質を識別するためのコード

<成分物質コード>：<物質コード>で指定される物質が混合物の場合にはその成分物質の物質コード、<物質コード>で指定される物質が純物質の場合は<物質コード>と同じコードが設定される。

【0062】<成分サブ番号>：同一物質種で物質名あるいは商品名が異なる化学物質を識別するためのコード

<部所管理フラグ>：センター管理物質であるか、部所管理管理物質であるかを識別するためのフラグ

<物質名称>：物質名、成分物質の場合はその物質名

<物質属性>：純物質・化合物／混合物／成分物質を識別する識別子

<法規分類コード>：<物質コード>で指定される物質を規制対象としている法規を示すコード

<保管庫管理フラグ>：個人管理であるか、保管庫単位での管理であるかを示すフラグ

<入庫者名>：入庫処理を行った人の名前

<入庫日時>：最後に入庫処理を行った日時

<タイプ>：液体、固体等の属性を示す

<利用単位>：ｋｇ、ｍｌ、個数等の使用単位

<保有量>：現時点の保有量を示す。この値は入庫処理、使用処理などにより増減する。

【0063】<保有量ＫＧ>：保有量をｋｇに変換した値、ガスの場合はNm^3に変換した値

<含有量>：成分物質の含有量（含有率）を示す。成分物質の保有量を求める際に使用される

<消防法最大保有ＫＧ>：消防法の管理対象物質に対して設定される値であり、特定区域内でその物質を安全に保有できる最大保有量を示す

<管理廃棄量割合>：使用量に対して、使用後に回収物質一時保管庫に入れられて管理される割合

<環境排出量割合（大気）>：使用量に対して、使用によって大気に排出される割合

<環境排出量割合（水）>：使用量に対して、使用によって水質に排出される割合

<環境排出量割合（土壌）>：使用量に対して、使用によって土壌に排出される割合

<化学変化量割合>：使用時に化学変化して他の物質に変化する割合

<リサイクル量割合>：使用後にリサイクル物質として再利用できる割合

<搬出量>：保有化学物質の使用によって製品が製造された場合に、その製品自体に含有されて製造現場から外へ搬出される量

＜使い方コード＞：＜物質コード＞で指定される物質の使用用途を示すコード
＜消防法係数＞：消防法で規制されている最大保有量に対する物質保有量の割合を示す。この割合を保管庫単位で物質毎に累積することにより、保管庫としての消防法係数を呈示することができる。
【００６４】＜重み付け値＞：該当する物質の環境に対する影響度の度合いを示す環境負荷指数。環境負荷指数と保有量との積を保管庫単位で物質毎に累積することにより、保管庫単位で環境負荷を調べることができる。
【００６５】この保有物質管理テーブルにおいては、物質名称を入力すると、予め割り当てられた物質コードが保有物質管理テーブルに自動設定される。そして、使い方を入力すると、後述する使い方テーブルが検索され、その物質コードと使い方とによって決定される、大気、水、土壌それぞれへの環境排出量割合や、化学変化量割合、リサイクル量割合の値が取得され、それらが保有物質管理テーブルの該当するフィールドにそれぞれ自動設定される。
【００６６】また、消防法係数、重み付け値の利用の仕方については、後述する。
【００６７】（履歴テーブル）図１１には、各部所で保有されている化学物質に対する使用、廃棄、移動などの履歴を管理するための履歴テーブルのフィールド構成が示されている。この履歴テーブルは、各保有化学物質毎にその使用量、廃棄量、移動量などを、時間的（期間）、空間的（部所単位、保管庫単位、全部所、全保管庫など）に管理するために用いられるものであり、リレーショナルデータベースを構成する複数のテーブルの１つである。保有している各化学物質毎に１レコード（１行）が割り当てられ、各レコードには図示のようなフィールドが定義されている。ここでは、代表的な幾つかのフィールドについてその説明を行う。なお、保有物質管理テーブルと同一名のフィールドの意味は、保有物質管理テーブルのそれと同じである。
【００６８】＜履歴種別＞：入庫、移動、使用、廃棄、回収等の処理の識別に用いられる
＜増減量＞：保管庫で保有されている保有量の増減量を示す。＜履歴種別＞が「使用による減少」を示す場合には、＜増減量＞の値は使用量に相当する値（マイナス）となり、＜増減量＞の値が使用量を示すことになる。
【００６９】（使い方テーブル）図１２には、前述の使い方テーブルの構成の一例が示されている。この使い方テーブルは、使用用途毎に各化学物質の大気、水、土壌それぞれへの環境排出量割合や、リサイクル量割合、化学変化量割合を定義したテーブルであり、使い方別に分けられた複数のテーブルから構成されている。各使い方テーブルは、前述の物質管理テーブルの使い方フィールドに設定される使い方コードによって関連づけられる。各使い方テーブルにおいては、保有している化学物質毎に１レコード（１行）が割り当てられ、各レコードには図示のように、＜物質コード＞、＜管理廃棄量割合＞、＜大気排出量割合＞、＜水質排出量割合＞、＜土壌排出量割合＞、＜リサイクル量割合＞、＜化学変化量割合＞、＜搬出量割合＞のフィールドが定義されている。
【００７０】前述したように、＜大気排出量割合＞、＜水質排出量割合＞、＜土壌排出量割合＞、＜リサイクル量割合＞、＜化学変化量割合＞、＜搬出量割合＞の値は、化学物質とその使い方との関係によって予め決めることができる。つまり、大気、水、土壌それぞれにどの程度の割合で排出され、また化学変化、搬出量およびリサイクル量がどの程度の割合で生じるかという係数値は、物質の性質と使い方によって予め予想することができるので、その予測値を使い方テーブルに登録しておけばよい。また、大気、水、土壌それぞれへの環境排出量割合については、使い方毎に各物質それぞれについての大気、水、土壌それぞれへの環境排出量を実測し、その測定値の統計データを用いて、使い方テーブルに登録する値を決定するようにしてもよい。
【００７１】図１２では、使い方コード＝０１に対応する使い方テーブルが例示されており、物質コード＝０１の化学物質を使い方コード＝０１で示される用途で使用した場合に、
大気排出量割合＝０．１
水質排出量割合＝０
土壌排出量割合＝０
リサイクル量割合＝０
化学変化量割合＝０
搬出量割合＝０
となる例が示されている。
【００７２】これら割合の合計値を１から引いた残りが回収物質一時保管庫に廃棄される管理廃棄量割合となるので、管理廃棄量割合＝０．９となる。
【００７３】また、物質コード＝０２の化学物質を使い方コード＝０１で示される用途で使用した場合には、
大気排出量割合＝０．２
水質排出量割合＝０．１
土壌排出量割合＝０
リサイクル量割合＝０
化学変化量割合＝０．２
搬出量割合＝０
となる例が示されている。この場合、管理廃棄量割合＝０．５となる。
【００７４】（集計表）図１３には、集計処理によって得られる集計表の一例が示されている。この集計表は環境排出量等を行政機関に開示するための報告書などとして用いられるものであり、前述の保有物質管理テーブルおよび履歴テーブルを用いて計算される。集計表には、図示のように、保有化学物質毎に、その物質コード、物質名、単位、前期在庫量、入庫量、当期在庫量、使用

量、管理廃棄量、移動量、リサイクル量、大気排出量、水質排出量、土壌排出量、化学変化量、搬出量等の値が含まれている。

【0075】（環境排出量割合の取得）図14には、環境排出量割合を使用テーブルから自動的に取得して保有物質管理テーブルに登録する手順が示されている。

【0076】まず、物質コードおよび使い方コードが保有物質管理テーブルに入力される（ステップS101）。この場合、人手により行う作業は、物質名一覧メニューから物質名を選択する作業と、使い方一覧メニューから使い方を選択する作業である。物質名を選択することにより、自動的に対応する物質コードの入力が行われる。

【0077】次いで、物質コードと使い方コードをキーとする使い方テーブルの検索が行われ、使い方コードキーに対応する使い方テーブルの中で、物質コードキーに該当するレコードから、管理廃棄量割合、大気排出量割合、水質排出量割合、土壌排出量割合、リサイクル量割合、化学変化量割合、搬出量割合の値が取得される（ステップS102）。

【0078】この後、その取得された管理廃棄量割合、大気排出量割合、水質排出量割合、土壌排出量割合、リサイクル量割合、化学変化量割合、搬出量割合の値が、保有物質管理テーブルの該当するフィールド位置に自動登録される（ステップS103）。

【0079】（集計表出力）図15には、集計表出力のための集計処理の手順が示されている。

【0080】まず、集計対象の化学物質についての時間的・空間的な使用量が履歴テーブルの増減量フィールドから取得される（ステップS111）。次いで、該当する物質についての管理排気量割合、大気排出量割合、水質排出量割合、土壌排出量割合、リサイクル量割合、搬出量割合、および化学変化量割合の値が、保有物質管理テーブルまたは履歴テーブルから取得される（ステップS112）。この取得した使用量は、以下のような内訳に分類される。

【0081】「使用量」＝「管理廃棄量」＋「環境排出量（大気、水、土壌）」＋「リサイクル量」＋「化学変化量」＋「搬出量」

したがって、集計対象の化学物質毎に、

「使用量」×「管理廃棄量割合」＝「管理廃棄量」
「使用量」×「大気排出量割合」＝「大気排出量」
「使用量」×「水質排出量割合」＝「水質排出量」
「使用量」×「土壌排出量割合」＝「土壌排出量」
「使用量」×「リサイクル量割合」＝「リサイクル量」
「使用量」×「化学変化量割合」＝「化学変化量」
「使用量」×「搬出量割合」＝「搬出量」

という計算を行うことにより、集計表に出力すべき、「管理廃棄量」、「大気排出量」、「水質排出量」、「土壌排出量」、「リサイクル量」、「搬出量」、および「化学変化量」の値が算出される（ステップS113）。

【0082】（環境排出量管理の第2の例）：廃棄量を基準とした管理

次に、環境排出量管理の第2の例について説明する。

【0083】前述の例では、化学物質毎に、使い方、環境排出量割合（大気、水、土壌）、使用量などを管理したが、これは少量多品種の物質を様々な用途で使用する研究機関等に好適な管理方法である。

【0084】これに対し、化学物質の使用用途が予め定められた工場等においては、大気、水、土壌などそれぞれへの環境排出量割合や化学変化量割合、リサイクル量割合、搬出量割合が化学物質毎に予め一義的に決定できる。このため、化学物質毎にその使い方や環境排出量割合を個々にテーブルで管理せずとも、入庫量と、未使用使用量、未使用廃棄量、使用済回収廃棄量の管理だけ前述の履歴管理テーブルを用いて行えば、あとは入庫量から未使用使用量、未使用廃棄量、および使用済回収廃棄量を減算した量に、大気、水、土壌などそれぞれへの環境排出量割合を乗算することで環境排出量を集計することができ、同様に化学変化量割合、リサイクル量割合、搬出量割合を乗算すれば、化学変化量、リサイクル量、搬出量などを集計できる。

【0085】ただし、この場合には、回収物質一時保管庫に入れられた廃棄物中には、使用処理によって不純物が混入している場合があるので、実測した廃棄量をそのまま使用すると、正しい使用量が算出できなくなることがある。したがって、図16に示すような不純物係数テーブルを用いて、実測した廃棄量から不純物を除いた実際の廃棄量を算出することが好ましい。

【0086】図16に示す不純物係数テーブルは、化学物質のある特定の「使い方」に対応するものであり、ここには、図示のように、物質コード毎に、不純物係数、大気排出量割合、水質排出量割合、土壌排出量割合、化学変化量割合の値が登録されている。（測定した廃棄量）×（1－不純物係数）によって、実際の廃棄量を求めることができる。

【0087】（集計表出力の第2の例）図17には、環境排出量管理の第2の例に対応する集計処理の手順が示されている。

【0088】まず、図16の不純物係数テーブルを用いて、実際の廃棄量を算出する処理が行われる（ステップS121）。この処理では、前述したように、

（測定した廃棄量）×（1－不純物係数）

の乗算によって実際の廃棄量Gが求められる。

【0089】次いで、時間的・空間的に集計された入庫量（　入庫量）から時間的・空間的に集計された実際の廃棄量（　G）を減算し、その減算結果に、対応する物質の大気排出量割合、水質排出量割合、土壌排出量割合、化学変化量割合等の値を乗ずることで、大気排出

量、水質排出量、土壌排出量、化学変化量等が求められる（ステップS122）。

【0090】なお、特定の条件下においては、
（　入庫量）－（　G）
は基本的に環境排出量と見なしても良い。

【0091】［第2実施形態］第1実施形態においても説明したように、環境排出量の管理のためには、純物質単位での物質管理が必要となる。ここでは、その純物質管理の具体的な仕組みを、第2実施形態として説明することにする。なお、本第2実施形態の化学物質管理システムの基本構成は第1実施形態と同じであり、第1実施形態で説明した（システム構成）、（機能）、（管理量の定義）、（管理種別）、（管理単位）、（環境排出量管理）、（保有物質管理テーブル）、（履歴テーブル）、（使い方テーブル）、（集計表）、（環境排出量割合の取得）、（集計表出力）、（環境排出量管理の第2の例）、（集計表出力の第2の例）はそのまま第2実施形態に適用される。

【0092】（保有物質管理テーブル）図18は、第1実施形態の図10で説明した保有物質管理テーブルの中で、純物質管理に関する部分のみを抽出して示したものである。図18の各フィールドの意味は第1実施形態で説明した通りである。図18から分かるように、純物質については1物質1レコードの割り当てになっており、混合物質（王水）については、その混合物質と、それを構成する各成分物質に対して個々にレコードが割り当てられている。

【0093】図18では、純物質であるエチルアルコールについては、物質コード＝A1、サブ番号＝00、成分物質コード＝A1、成分サブ番号＝00、含有量＝1となっている。このように純物質の場合には、物質コードと成分物質コードは同じになり、また含有量＝1となる。

【0094】エタノールは、エチルアルコールと実質的に同一の物質であるが名前の異なる物質である。このエタノールについては、物質コードはエチルアルコールと同じA1となるが、サブ番号はエチルアルコールと異なる値01となる。また、含有量は1である。

【0095】混合物である王水については、物質コード＝B1、サブ番号＝00、成分物質コード＝B1、成分サブ番号＝00となる。そして、その下のレコードには、王水の成分物質である硝酸と塩酸のレコードが配置される。

【0096】成分物質である硝酸については、物質コードは王水と同じB1となり、そしてサブ番号＝00、成分物質コード＝C1、成分サブ番号＝00、含有量＝0．25となる。含有量＝0．25は、王水には硝酸が0．25の割合で含まれていることを意味する。成分物質の含有量の値は、混合物質の保有量からその成分物質の保有量を計算するために用いられる。

【0097】「成分物質の保有量」＝「混合物質の保有量」×「成分物質の含有量」

第2の成分物質である塩酸については、物質コードは王水と同じB1となり、そしてサブ番号＝00、成分物質コード＝D1、成分サブ番号＝00、含有量＝0．75となる。

【0098】このように、混合物質についてはその成分物質と含有量を保有物質管理テーブルで管理することにより、純物質単位での管理を容易に行うことができるようになり、純物質単位で環境排出量の集計等を行うことが可能となる。この純物質単位の管理は、保有物質管理テーブルのみならず、履歴テーブルについても同様に行われる。

【0099】また、前述の使い方テーブルには、純物質単位で環境排出量割合（大気、水、土壌）などの情報が登録されているので、混合物質の場合にはその成分物質毎に環境排出量割合（大気、水、土壌）を保有物質管理テーブルに登録すればよい。

【0100】なお、ここでは、各化学物質を管理するためのレコード内に成分物質に関するフィールドを用意するのではなく、成分物質に関する情報や混合物質に関する情報を他の純物質と同様に全て1レコードとして管理しているが、これは、無駄なフィールドの発生を防止すると共に、環境排出量の計算を容易に行えるようにするためである。

【0101】各混合物質とその成分物質および含有量との関係は、物質管理データベースと称されるデータベースに予め定義されている。全保有化学物質は「物質管理テーブル」で一元的に定義されている。なお、このテーブルは保有物質管理テーブルと同じ構造である。したがって、混合物質名さえ入力すれば、あとは物質管理データベースから成分物質の情報を取り出して自動的に登録することができる。この手順の一例を図19のフローチャートに示す。

【0102】図19に示されているように、物質登録を行うための画面上でユーザにより混合物質コードまたは混合物質名が入力されると（ステップS131）、その混合物質コードまたは混合物質名をキーとする物質管理データベースの検索が行われ、成分物質と含有量などの情報が物質管理データベースから取得される（ステップS132）。そして、それら情報が保有物質管理テーブルに登録される（ステップS133）。

【0103】なお、物質管理データベースから取得された成分物質および含有量などの情報を前述の物質登録のための画面上に表示し、必要に応じて、成分の選択、追加、変更、あるいは含有量の変更などの操作を行えるようにしても良い。混合物質には、自部所で混合することによって得られた混合物質も存在するので、成分データベースに定義されたデフォルトの成分情報では対応しきれないことも考えられるためである。

【0104】（物質登録画面）図20には、物質登録画面（物質登録フォーム）の一例が示されている。各フィールドの意味は以下の通りである。

【0105】<部所管理物質名>：部所で登録する物質の名称。既に登録されている名称は登録できない。

【0106】

<薬品形状>：薬品の形状を選択

<容器容量>：容器の容量で物質を管理する必要がある場合はこちらのラジオボタンを選択し、容量を入力する

<単位>：容器容量で管理を行う場合は容量単位を選択する

<本数>：容器容量で管理を行う場合は容器の本数を入力する。容器容量×本数が入庫量となる

<入庫量>：容器容量で管理しない場合はこちらのラジオボタンを選択し、入庫量を入力する

<単位>：入庫量の単位

<比重>：登録物質の比重

<入庫部所>：入庫する保管庫のある部所を選択

<入庫保管庫>：入庫する保管庫を選択

<管理者>：選択した保管庫の管理者名

<TEL>：選択した保管庫の管理者の内線番号

<消防法係数>：選択した保管庫の消防法係数

<入庫日>：物質を保管庫に登録した日付

<成分>：成分の情報が一覧表示される。変更したい成分情報の箇所をダブルクリックすると図21のような情報変更用のダイアログ画面（成分情報変更フォーム）が表示される。ここで、登録する物質中の成分の含有量、単位、比重を設定できる。

【0107】また、図20の「成分追加」ボタンをクリックすると、図22のような成分追加用のダイアログ画面（追加成分登録フォーム）が表示され、そこで成分を追加登録することができる。

【0108】（成分物質の使用量算出）図23には、成分物質の使用量を算出するための処理手順が示されている。

【0109】まず、履歴テーブルの増減量フィールドから混合物質の使用量を取得する（ステップS151）。次いで、その混合物質の各成分物質の含有量を保有物質管理テーブルまたは履歴テーブルがら取得ずる（ステップS152）。そして、その取得した含有量を混合物質の使用量に乗算することにより、各成分ごとにその使用量を算出し、それを履歴テーブルの該当する増減量フィールドに登録する（ステップS153）。

【0110】（集計表出力）図24には、集計表出力のための集計処理の手順が示されている。この手順は第1実施形態と全く同じである。

【0111】すなわち、まず、集計対象の純物質（混合物質の場合にはその成分物質）についての時間的・空間的な使用量が履歴テーブルの増減量フィールドから取得される（ステップS161）。次いで、該当する純物質（混合物質の場合にはその成分物質）についての管理廃棄量割合、大気排出量割合、水質排出量割合、土壌排出量割合、リサイクル量割合、および化学変化量割合の値が、保有物質管理テーブルまたは履歴テーブルから取得される（ステップS162）。この取得した使用量は、以下のような内訳に分類される。

【0112】「使用量」＝「管理廃棄量」＋「環境排出量（大気、水、土壌）」＋「リサイクル量」＋「化学変化量」

したがって、集計対象の純物質（混合物質の場合にはその成分物質）毎に、

「使用量」×「管理廃棄量割合」＝「管理廃棄量」
「使用量」×「大気排出量割合」＝「大気排出量」
「使用量」×「水質排出量割合」＝「水質排出量」
「使用量」×「土壌排出量割合」＝「土壌排出量」
「使用量」×「リサイクル量割合」＝「リサイクル量」
「使用量」×「化学変化量割合」＝「化学変化量」
「使用量」×「搬出量割合」＝「搬出量」

という計算を行うことにより、集計表に出力すべき、「管理廃棄量」、「大気排出量」、「水質排出量」、「土壌排出量」、「リサイクル量」、「搬出量」、および「化学変化量」の値が算出される（ステップS163）。

【0113】［第3実施形態］次に、前述の消防法係数を用いた安全性管理のための仕組みを、第3実施形態として説明することにする。なお、本第3実施形態の化学物質管理システムの基本構成は第1実施形態と同じである。

【0114】まず、安全性管理の基本原理について説明する。

【0115】本実施形態では、安全性の度合いを表す安全指数を、化学物質の取扱いを規制している消防法などの法規で指定された最大保有量（保有が認められる上限値）に対する保有量の割合によってモデル化している。すなわち、保有している化学物質毎に、その保有量と、その化学物質の取扱いを規制している法規で規定された最大保有量（消防法最大保有KG）とを前述の保有物質管理テーブルを用いて管理しておき、法規で規定された最大保有量に対する規制物質の保有量の割合（消防法係数）を算出し、その算出結果を安全指数として出力する。この場合、各物質の消防法係数の合計が保管庫の安全指数となる。以下、この仕組みを実現するための好適な具体例について説明する。

【0116】（法規分類コードマスタテーブル）図25には、法規分類を管理するための法規分類コードマスタテーブルの例が示されている。法規分類コードマスタテーブルにおいては、法規分類毎に1レコードが割り当てられており、各レコードには、<法規分類コード>、<法規分類名>、<消防法管理区分>、<消防法最大保有KG>、<消防法最大保有l>、<登録日時>、<更新

日時>のフィールドが定義されている。消防法で定義される最大保有量の単位にはｋｇとｌ（リットル）とがある。消防法第四類で規定される物質の最大保有量の単位はｌ（リットル）であるので、消防法第四類で規定される物質については、前述の保有物質管理テーブルの消防法最大保有ＫＧのフィールドには比重（物理量としては無次元だが、便宜上次のように定義される：ｋｇ／ｌ）に、最大保有量（ｌ）を乗算することによって換算された値が登録される。

【０１１７】この法規分類コードマスタテーブルにより、化学物質を規制する各法規毎に消防法最大保有ＫＧや消防法最大保有ｌ（リットル）が管理される。法規の種類としては、労働安全衛生法、消防法、廃棄物の処理および清掃に関する法律などがあるが、最大保有量の規定があるのは消防法のみである。

【０１１８】（消防法一覧）次に、各物質毎にその消防法係数を表示するための消防法一覧表示画面について説明する。ユーザ管理ソフト１２によって提供される図２６の操作画面上で消防法一覧タブを選択すると、図示のように、検索対象として選択された保管庫に保有されている化学物質それぞれについて、その物質コード、物質名、保有量、単位、消防法係数、該当する法規名が一覧表示される。

【０１１９】ここで、消防法係数とは、前述したようにその化学物質の保有量を、その化学物質を規制する消防法で規定された最大保有量で割った値である。例えば、エタノールを０．０１１９２Ｋｇ保有している場合には、その消防法係数は０．００００４となる。消防法係数が１未満の物質については、その物質は比較的安全な状態であることを意味する。

【０１２０】これら各物質の消防法係数を合計したものが画面下の「消防法係数合計」フィールドに表示される。「消防法係数合計」フィールドの値は、検索対象として選択された保管庫の安全指数として用いられ、「消防法係数合計」＝１未満であれば、その保管庫は比較的安全であることを意味する。「消防法係数合計」＝１以上になる保管庫については、消防法に従った管理を行う必要がある。

【０１２１】（消防法係数算出処理）図２７のフローチャートには、消防法係数を算出するための手順が示されている。まず、消防法一覧タブの画面で指定された調査対象の保管庫に保有されている各化学物質毎に、その保有量と消防法最大保有ＫＧの値が保有物質管理テーブルから取得される（ステップＳ１７１）。次いで、保有量を消防法最大保有ＫＧで除算することにより、各物質毎に消防法係数が求められる（ステップＳ１７２）。そして、各物質毎に消防法係数を累積することにより、調査対象の保管庫に保有されている化学物質それぞれの消防法係数の合計値が算出され、それが「消防法係数合計」として表示される（ステップＳ１７３）。

【０１２２】なお、前述したように保有物質管理テーブルに消防法係数フィールドが設けられている場合には、ステップＳ１７１，Ｓ１７３の処理によって各物質の消防法係数が予め求められているので、消防法一覧タブが選択された場合に行うのは、ステップＳ１７３の処理だけとなる。また、消防法最大保有ＫＧの値は法規分類コードマスタテーブルで管理されているので、消防法最大保有ＫＧの値を、保有物質管理テーブルからではなく、法規分類コードマスタテーブルから取得するようにしても良い。

【０１２３】［第４実施形態］次に、前述の重み付け値を用いた環境負荷管理のための仕組みを、第４実施形態として説明することにする。なお、本第４実施形態の化学物質管理システムの基本構成は第１実施形態と同じである。

【０１２４】まず、環境負荷管理の基本原理について説明する。

【０１２５】本実施形態では、各化学物質の環境に対する影響度を示す環境負荷指数（環境影響度）を、化学物質の保有量とその化学物質に対応する重み係数とを用いてモデル化している。重み係数の値は、環境に対する影響の大きい化学物質ほどその重み係数の値は大きくなる。このように重み係数を用いたモデル化により、保有量と重み係数との積を物質毎に累積するといった簡単な計算を行うだけで、環境負荷を的確に把握することが可能となる。以下、この仕組みを実現するための好適な具体例について説明する。

【０１２６】（物質コードテーブル）保有物質それぞれに付与される固有の物質コードを管理する物質コードテーブルには、図２８に示すように、物質コードと対応して、その物質に対応する重み付け値（重み係数）が定義されている。重み係数の値は、本システムによって規定された固有の値であり、前述のように、環境に対する影響の大きい化学物質ほどその重み係数の値は大きくなる。各物質の環境への影響度を示す環境負荷指数（環境影響度）は、物質毎に決めた重み係数の値（トルエン：１０００、過酸化水素：１０等）にその物質の保有量を乗じて求められる値である。

【０１２７】（環境影響度の算出処理）図２９のフローチャートには、環境影響度を算出する手順が示されている。

【０１２８】まず、調査対象の保管庫に保有されている各化学物質の重み付け値が物質コードテーブルまたは保有物質管理テーブルから取得される（ステップＳ１８１）。そして、各化学物質の保有量が保有物質管理テーブルから取得され、その保有量と重み付け値とによって各化学物質毎に影響度（環境負荷指数）が算出される（ステップＳ１８２）。各化学物質の影響度は、重み付け値×保有量の乗算によって求められる。この後、化学物質それぞれの影響度が累積されることにより、化学物

質それぞれの影響度の合計値が調査対象保管庫の環境影響度として算出される（ステップS183）。

【0129】なお、1保管庫単位のみならず、例えば隣接して設置されている複数の保管庫を1グループとして、そのグループ単位で環境影響度を算出してもよい。

【0130】（環境影響度の表示）ユーザ管理ソフト12によって提供される図30の操作画面上で保有物質一覧タブを選択すると、図示のように、検索対象の保管庫で保有されている化学物質が一覧表示される。この画面上には、「影響度」のフィールドが設けられており、ここには、現在の化学物質保有量を基準に算出された各化学物質の影響度の合計値、つまり検索対象の保管庫の環境影響度が表示される。「影響度」のフィールドの表示色は、影響度により、例えば、9000未満：緑、9000以上10000未満：黄色、10000以上：赤、に変化する。このように保管庫単位で環境に対する影響度を評価しそれを数字で呈示できるようにすることにより、例えば、影響度が10000以上の保管庫を検索し、その保管庫の管理者に対して、ISO14001などの環境保全国際規格に基づく指導を行う、といった運用が可能となる。

【0131】［他の機能］次に、前述各実施形態1～4のシステムにそれぞれ設けられている他の機能について説明する。

【0132】（容器の期限管理機能）この機能は、ガスボンベなどの容器単位で保有・管理されている化学物質に対して、その容器の安全性を定期的に検査するために用いられる機能である。ガスボンベなどのように定期的な検査（メンテナンス）が必要な容器については、図31に示すように、それが保管されている保管庫名、容器の種類を示すメンテナンス対象容器情報、何ヶ月に一回の周期でメンテナンスを行うべきかを示すメンテナンスサイクル情報、前回のメンテナンス実行日時を示す情報などが管理される。

【0133】図32は、容器期限管理の手順である。

【0134】システムは、図31のテーブルを用いて、保管庫毎に、メンテナンスが必要な容器の期限管理を行っており（ステップS191）、現在の日時から前回のメンテナンス日時を減算した値がメンテナンスサイクルに達する容器を検出すると（ステップS192）、容器のメンテナンスを行うべき保管庫とその容器種を保管庫管理者等に通知する（ステップS193）。なお、次にメンテナンスをおこなうべき日時の数日前に該当する容器の一覧を紙などに出力するようにしても良い。

【0135】（出力テーブル変換機能）一般に、国、県、市などの行政毎に使用される化学物質コードは異なることが多い。また、これら行政が使用する化学物質コードと本システムで使用する化学物質コードも異なる。出力テーブル変換機能は、このように互いに異なるコード体系を相互に変換し、指定されたコード体系を用いて化学物質管理や報告書作成を行うための機能である。この機能を実現するため、本システムでは、図33に示されているような物質コード対応表が用いられる。この物質コード対応表は、物質毎に、本システムで使用される物質コードと、国、県、市などの行政で使用される物質コードとの対応関係を保持している。この物質コード対応表を用いた出力テーブル変換処理の手順を図34に示す。

【0136】まず、報告書を提出すべき行政に対応する指定コードが入力される（ステップS201）。そして、保有物質管理テーブルや履歴テーブルなどで管理されている各化学物質の物質コード（本化学物質管理システムの物質コード）を、物質コード対応表を用いて、指定コードで指定された行政等に対応するコード体系に変換する（ステップS202）。そして、変換された物質コードを用いて各種集計処理が行われ、指定コードで指定されたコード体系を用いた報告書の作成が行われる（ステップS203）。

【0137】（単位の自動変換）この機能は、図3の入庫処理で既に説明したように、入庫量の単位（ml，l，g，kg，Nm^3など）を相互に変換するための機能であり、どのような単位で入力が行われても、それを管理に必要な他の単位および量に換算することができる。この単位の自動変換の手順を図35に示す。

【0138】まず、入力された単位および量と比重など（ガスの場合は圧力なども）を用いて他の単位への換算が行われる（ステップS211）。そして、入力された単位および量と換算値（単位および量）が保有物質管理テーブル等に登録される（ステップS212）。このように入力された単位および量と換算値の双方を保有物質管理テーブルで管理することにより、様々な集計形式に柔軟に対応することが可能となる。

【0139】（保管庫セキュリティー機能）各部所の利用者は、図30の保有物質一覧タブを使用することにより、全保管庫の保有物質を検索することが出来、自分の部所のみならず、他のすべての部所の保管庫についてどのような物質が保有されているかを知ることができる。しかし、例えば毒物などの危険な物質が保有されている保管庫についてまで自由な検索を許すと、不正にその物質が持ち出されて使用されるといった危険がある。そこで、本化学物質管理システムにおいては、特定の保管庫については、その保有物質の内容を他部所からは参照できないようにするという保管庫セキュリティー機能が設けられている。

【0140】図36には、各保管庫毎に、有毒物質の保有の有無と、ユーザによる保有物質検索を許すか否かを指定するフラグとの対応関係が示されている。ここでは、保管庫AとBについては有毒物質は保有されて無いので、通常通り、他部所からの検索が許されており、また保管庫Cについては有毒物質が保有されているため、

他部所からの検索が禁止されている状態を示している。

【0141】このような保管庫単位の検索許可／禁止の設定は、保管庫管理者によって行われる。以下、そのためのインターフェイスについて説明する。

【0142】図37には、保管庫管理のための画面（保管庫管理タブ）の一例が示されている。この保管庫管理タブは保管庫情報（保管庫コード、保管庫名、保管庫管理者）とその保管庫利用者情報（保管庫の利用者ＩＤ、利用者名など）を定義するためのものであり、その内容を修正できるのは保管庫管理者である。この保管庫管理タブの「保管庫情報変更」ボタンをクリックすると、図38の保管庫情報変更ダイアログ画面が表示される。この保管庫情報変更ダイアログ画面の各フィールドの意味は以下の通りある。

【0143】

＜保管庫名＞：保管庫名を入力する

＜管理者名1＞：代表の管理者名をプルダウンメニューで選択する

＜ＴＥＬ＞：代表の管理者の内線番号

＜管理者名2＞：サブ管理者をプルダウンメニューで選択する

＜ＴＥＬ＞：サブ管理者の内線番号。

【0144】＜他部所公開＞：保有物質一覧で他の部所の利用者に当保管庫を公開するか否かを設定する。毒物などの保管庫のみこの設定を行う。

【0145】“公開”…他の部所の利用者も保有量状況を見ることができる。

【0146】“非公開”…自部所の利用者のみ保有状況をする事ができる。

【0147】＜利用可能者＞：該当保管庫の利用者の範囲を設定する。

【0148】“保管庫利用者のみ”…該当保管庫の利用者のみ、保管庫への入庫や、薬品の使用が可能。

【0149】“システム利用者全員”…他の部所の利用者も該当保管庫の薬品を使用する事が出来る。

【0150】＜保管庫種別＞：保管庫か回収物質一時保管庫かを選択する。

【0151】（バーコード入力機能）バーコード入力機能は、入荷された物質毎にバーコードを付与し、そのバーコードから物質管理に必要な情報を自動的に読み取ってデータベースに登録する機能である。このバーコードには、物質名、量などの物質識別のための情報の他、前述の環境排出量割合、使い方、重み付け値（または環境負荷指数）、該当する法規の種類、消防法最大保有量（または消防法係数）などの情報を含めておくことができる。これにより、人手による入力作業が軽減され、しかも環境排出量管理、安全性管理、環境負荷管理のためのパラメタを自動的にテーブルに登録することが可能となり、それら管理の効率化を図ることができる。

【0152】なお、バーコード装置（バーコード入力装置）は、保管庫単位で設置することも出来るが、設置コストを考慮して化学物質を搬送するための搬送装置（例えば台車など）に設けておき、この搬送装置に設けられたバーコード装置から本発明の化学物質管理システムへワイヤレス入力可能に構築しておくことができる。このようにシステム全体を構築すればバーコード装置の設置を必要最小限にすることができる。

【0153】（非意図的生成物の管理機能）ＰＲＴＲでは、ダイオキンなどに代表される非意図的生成物も届出対象物質となる可能性がある。

【0154】その場合の管理としては、塩素を含む樹脂などを管理対象物質として追加し、前述した化学変化量割合フィールドなどを転用して管理するか、あるいは非意図的生成物フィールドを新たに追加して設け、上記した実施形態の管理手法に沿って非意図的生成物の発生量を管理することができる。

【0155】（各実施形態の効果）以上、本発明の実施形態を実施形態1～4に分けて説明したが、本発明の化学物質管理システムは、実際には、これら実施形態1～4の機能を併せ持つシステムとして構築されていることが理解されよう。したがって、本化学物質管理システムは、保有物質の使用の結果生ずる環境排出量や、保有物質に潜在する環境影響度、さらには消防法係数などを多角的に管理・集計することができる。特に、環境排出量管理、環境影響度管理、消防法係数管理などに必要なほとんど全てのパラメタを保有物質管理テーブル等に登録して管理しているので、自然環境への影響や安全性について様々な観点から統計的な値を容易に求めることができる。

【0156】これは、1）環境排出量については、それを物質種とその使用用途とによって決まるパラメタによってモデル化し、2）安全性の度合いを表す安全指数については、化学物質の取扱いを規制している消防法などの法規で指定された最大保有量に対する保有量の割合によってモデル化し、3）環境負荷については、化学物質の保有量とその化学物質に対応する重み係数とを用いてモデル化する、という化学物質特有の性質とデータベースの特徴を考慮した技術思想により初めて実現されたものである。

【0157】また、通常は、各部所には薬品の種類別などに応じて複数の保管庫が設定されることが多いため、本各実施形態のように、入庫、使用、移動、廃棄などの履歴を初め、環境排出量管理、環境影響度管理、消防法係数管理を、保管庫を単位として行うことで、よりきめ細やかな物質管理が可能となると共に、指導すべき保管庫管理者の特定などを容易に行うことができる。特に、保管単位での管理と環境影響度管理または消防法係数管理を組み合わせることで、保管庫単位で安全度を調べたり、保管庫単位で環境影響度を調べるといった処理が可能となる。

【0158】なお、本化学物質管理システムの各機能は全てソフトウェアによって実現することが出きるので、その機能実現のための手順を含むコンピュータプログラムを用意し、それを記録媒体を通じて通常のコンピュータに導入するだけで本各実施形態と同様の効果を得ることができる。

【0159】

【発明の効果】以上説明したように、本発明によれば、自然環境に及ぼす影響や安全性を迅速且つ簡易に調べることができる理想的な化学物質管理システムを実現することが出きる。

【図面の簡単な説明】

【図1】本発明の第1実施形態に係る化学物質管理システムの構成を示すブロック図。

【図2】同実施形態の化学物質管理システムの機能構成を示すブロック図。

【図3】同実施形態の化学物質管理システムで用いられる入庫物質登録画面の一例を示す図。

【図4】同実施形態の化学物質管理システムで用いられる移動物質登録画面の一例を示す図。

【図5】同実施形態の化学物質管理システムで用いられる使用物質登録画面の一例を示す図。

【図6】同実施形態の化学物質管理システムで用いられる廃棄物質登録画面の一例を示す図。

【図7】同実施形態の化学物質管理システムで用いられる管理量の定義と処理の流れを示す図。

【図8】同実施形態の化学物質管理システムで用いられる物質管理種別を説明するための図。

【図9】同実施形態の化学物質管理システムにおける物質の管理単位を説明するための図。

【図10】同実施形態の化学物質管理システムで用いられる保有物質管理テーブルの一例を示す図。

【図11】同実施形態の化学物質管理システムで用いられる履歴テーブルの一例を示す図。

【図12】同実施形態の化学物質管理システムで用いられる使い方テーブルの一例を示す図。

【図13】同実施形態の化学物質管理システムによって作成される集計表の一例を示す図。

【図14】同実施形態の化学物質管理システムにおいて環境排出量割合を保有物質管理テーブルに登録する手順を示すフローチャート。

【図15】同実施形態の化学物質管理システムにおける集計処理の手順を示すフローチャート。

【図16】同実施形態の化学物質管理システムで用いられる不純物係数テーブルの一例を示す図。

【図17】同実施形態の化学物質管理システムにおける集計処理の手順の第2の例を示すフローチャート。

【図18】本発明の第2実施形態に係る化学物質管理システムに設けられた純物質管理機能の実現に必要な保有物質管理テーブルのフィールド構成を説明するための図。

【図19】同実施形態の化学物質管理システムにおける成分情報登録処理の手順を示すフローチャート。

【図20】同実施形態の化学物質管理システムで用いられる物質登録画面の一例を示す図。

【図21】同実施形態の化学物質管理システムで用いられる成分情報変更画面の一例を示す図。

【図22】同実施形態の化学物質管理システムで用いられる追加成分登録画面の一例を示す図。

【図23】同実施形態の化学物質管理システムにおける成分物質の使用量算出処理の手順を示すフローチャート。

【図24】同実施形態の化学物質管理システムで用いられる集計処理の手順を示すフローチャート。

【図25】本発明の第3実施形態に係る化学物質管理システムで使用される法規分類コードマスタテーブルの構成を示す図。

【図26】同実施形態の化学物質管理システムで用いられる消防法一覧画面の一例を示す図。

【図27】同実施形態の化学物質管理システムにおける消防法係数算出処理の手順を示すフローチャート。

【図28】本発明の第4実施形態に係る化学物質管理システムで用いられる物質コードテーブルの一例を示す図。

【図29】同実施形態の化学物質管理システムにおける環境影響度算出処理の手順を示すフローチャート。

【図30】同実施形態の化学物質管理システムで用いられる保有物質一覧画面の一例を示す図。

【図31】同各実施形態の化学物質管理システムにおける容器期限管理のためのテーブルを示す図。

【図32】同各実施形態の化学物質管理システムに適用される容器期限管理の手順を示すフローチャート。

【図33】同各実施形態の化学物質管理システムに設けられる物質コード対応表の一例を示す図。

【図34】同各実施形態の化学物質管理システムに適用される出力テーブル変換処理の手順を示すフローチャート。

【図35】同各実施形態の化学物質管理システムに適用される単位自動変換処理の手順を示すフローチャート。

【図36】同各実施形態の化学物質管理システムに適用される保管庫セキュリティー機能の原理を説明するための図。

【図37】図36の保管庫セキュリティー機能で使用される保管庫管理画面の一例を示す図。

【図38】図36の保管庫セキュリティー機能で使用される保管庫情報変更画面の一例を示す図。

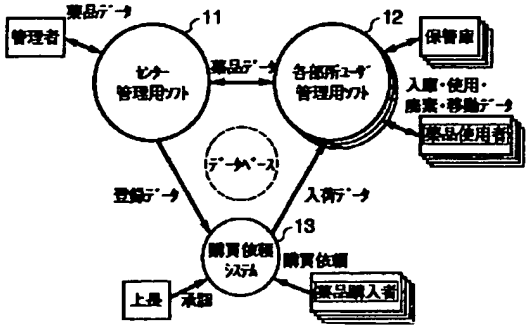
【符号の説明】

11…センター管理用ソフト

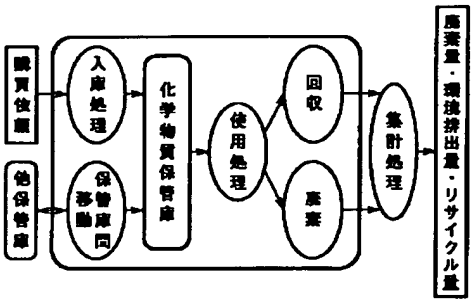
12…ユーザ管理用ソフト

13…手配依頼システム

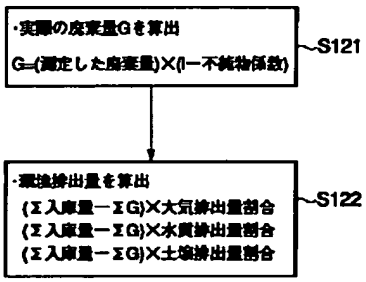
【図1】



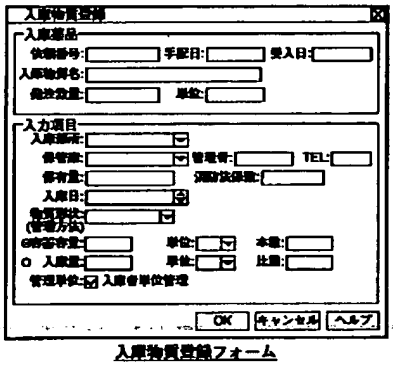
【図2】



【図17】

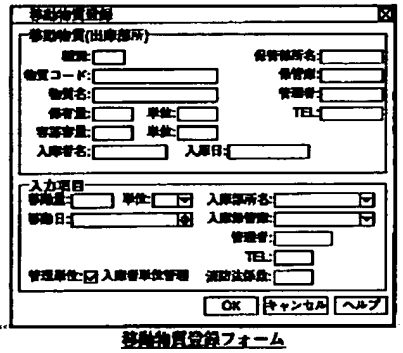


【図3】



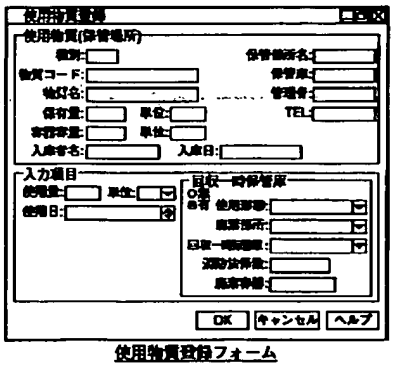
入庫物質登録フォーム

【図4】



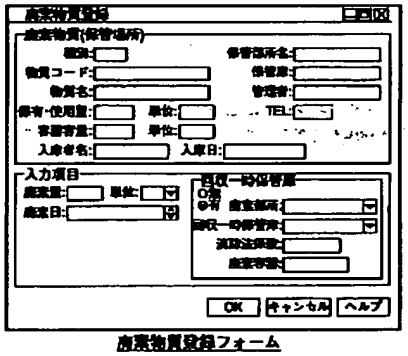
移動物質登録フォーム

【図5】



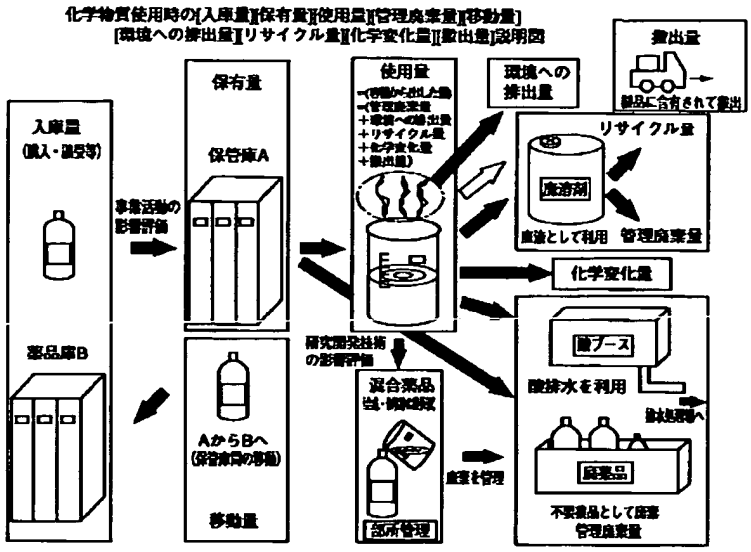
使用物質登録フォーム

【図6】

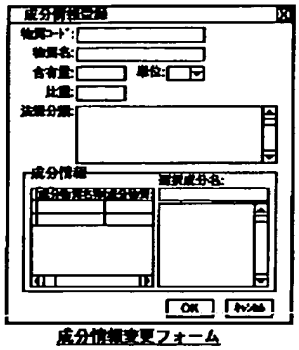


廃棄物質登録フォーム

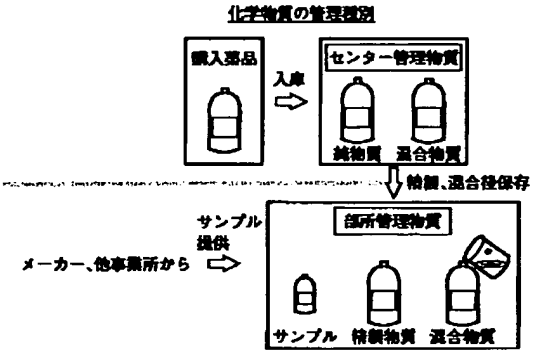
【図7】



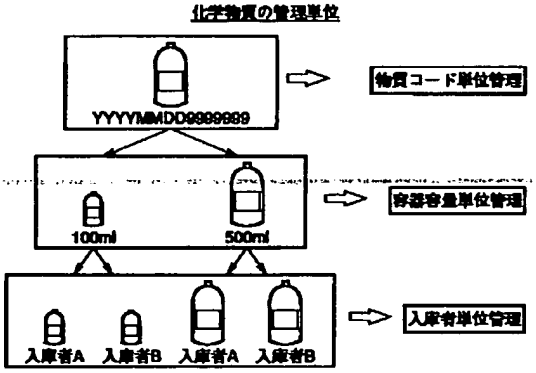
【図21】



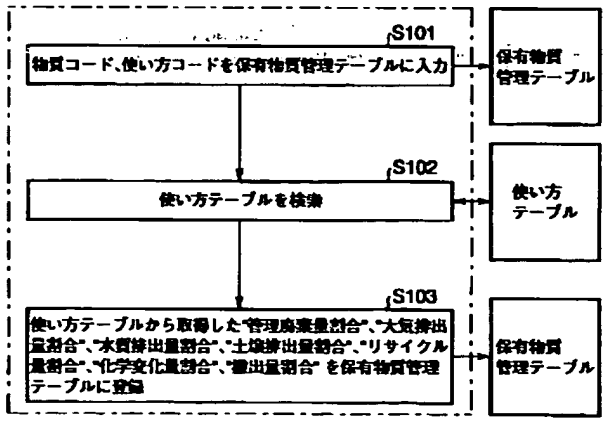
【図8】



【図9】



【図14】



【図16】

不純物係数テーブル

物質コード	不純物係数	大気排出量割合	水質排出量割合	土壌排出量割合	化学変化量割合	搬出量割合
01	0.4	0.1	0.2	0	0	0
・	・	・	・	・	・	・
・	・	・	・	・	・	・
・	・	・	・	・	・	・
・	・	・	・	・	・	・
・	・	・	・	・	・	・

【図10】

保有物質管理ﾃｰﾌﾞﾙ

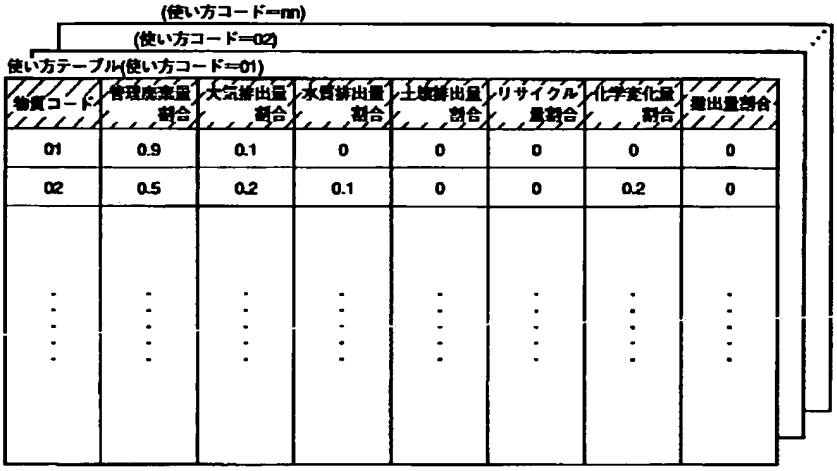
ﾌｨｰﾙﾄﾞ名	備考
保管庫ｺｰﾄﾞ	
物質ｺｰﾄﾞ	
ｻﾌﾞ番号	00～99
成分物質ｺｰﾄﾞ	混合物の成分となる物質ｺｰﾄﾞ。 純物質の場合は自分の物質ｺｰﾄﾞを設定
成分ｻﾌﾞ番号	00～99
部所管理ﾌﾗｸﾞ	0：ｾﾝﾀｰ管理物質、1：部所管理物質
物質名称	成分の場合はその成分の物質名称
物質属性	0：純物質・化合物、1：混合物、2：成分
法規分類ｺｰﾄﾞ	
保管庫管理ﾌﾗｸﾞ	0：個人管理、1：保管庫管理
入庫者名	入庫処理を行った人の名前　保管庫管理ﾌﾗｸﾞ="1"の場合はNull
入庫日時	最後に入庫処理を行った日時 保管庫管理ﾌﾗｸﾞ="1"の場合はNull
ﾀｲﾌﾟ	1：液体、2：固体(重さ)、3：固体(長さ)、4：固体(個数)、6：圧縮ｶﾞｽ、 7：液化ｶﾞｽkg管理、8：液化ｶﾞｽm3管理 このﾌｨｰﾙﾄﾞにより使用、廃棄、移動の際に利用できる単位を制御する
利用単位	kg, l, m, 個, Nm3　購入する物質に合わせて選択される
本数	ｶﾞｽﾎﾞﾝﾍﾞの本数
圧力	圧縮ｶﾞｽの初期充填圧力。kg/cm2
濃度	圧縮ｶﾞｽの濃度
保有量	現時点の保有量　入庫処理、薬品使用により増減する
比重	比重。入庫時・移動時に変更可能
ｶﾞｽ換算係数	ｶﾞｽ換算係数
保有量KG	保有量をkgに変換した値。ｶﾞｽの場合はNm3に変換した値
含有量	成分の場合設定。保有量を求める際に使用。 成分の保有量=混合物の保有量×成分の含有量
消防法最大保有KG	物質属性が成分ではないときに設定。消防法の管理対象の場合設定。 対象外はNullを設定。消防法第4類の場合は最大保有量が1(ﾘｯﾄﾙ)であるが、入庫時に比重(kg/l)×最大保有量(l)で最大保有量(kg)を
管理廃棄量割合	使用後に廃棄庫に廃棄される割合
環境排出量割合(大気)	使用時に大気に排出される割合
環境排出量割合(水)	使用時に水質に排出される割合
環境排出量割合(土壌)	使用時に土壌に排出される割合
化学変化量割合	使用時に化学変化して他の物質に変る割合
ﾘｻｲｸﾙ量割合	使用時にﾘｻｲｸﾙに廻る割合
搬出量割合	製品に含有されて外へ搬出される割合
ｺﾒﾝﾄ	
登録日時	ﾚｺｰﾄﾞが登録された日時
更新日時	ﾚｺｰﾄﾞが更新された日時
使い方ｺｰﾄﾞ	物質の使い方を示すｺｰﾄﾞ
消防法係数	保有量÷消防法最大保有KG
重み付け値	環境負荷指数

【図11】

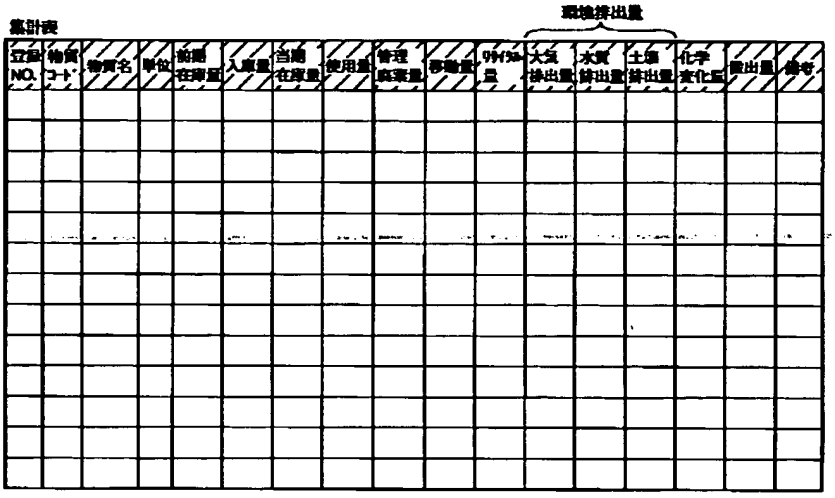
履歴ﾃｰﾌﾞﾙ

ﾌｨｰﾙﾄﾞ名	備考
履歴種別	00:その他、 11:入庫による増加、12:移動による増加、13:棚卸による増加、 14:ﾌｧｲﾙ棚卸による増加、17:使用中物質廃棄による増加、 18:使用による増加、19:未使用廃棄による増加、 21:使用による減少、26:ﾘｻｲｸﾙによる減少、 27:使用中物質廃棄による減少、 28:回収による減少、29:未使用廃棄による減少
保管庫ｺｰﾄﾞ	
物質ｺｰﾄﾞ	
ｻﾌﾞ番号	00～99
成分物質ｺｰﾄﾞ	混合物の成分となる物質ｺｰﾄﾞ。 純物質の場合は自分の物質ｺｰﾄﾞを設定
成分ｻﾌﾞ番号	00～99
物質属性	0:純物質・化合物、1:混合物、2:成分
法規分類ｺｰﾄﾞ	
部所管理ﾌﾗｸﾞ	0:ｾﾝﾀｰ管理物質、1:部所管理物質
物質名称	
利用者ID	
利用者名	
ﾀｲﾌﾟ	1:液体、2：固体(重さ)、3:固体(長さ)、 4:固体(個数)、5:ｳｪﾊ、6:ｶﾞｽ このﾌｨｰﾙﾄﾞにより使用、廃棄、移動の際に利用できる単位を制御する
増減量	保有量が減る場合はﾏｲﾅｽ、増える場合はﾌﾟﾗｽの値
利用単位	kg, l, m, 枚, 個
増減本数	ｶﾞｽﾎﾞﾝﾍﾞの本数
比重	比重
ｶﾞｽ換算係数	ｶﾞｽ換算係数
圧力	圧縮ｶﾞｽの初期充填圧力。kg/cm2
濃度	圧縮ｶﾞｽの濃度
増減量KG	増減量kg単位に変換した値
含有量	成分の含有量
容器名称	回収容器名称(ﾌｫｰﾑより入力。ｺﾒﾝﾄ程度)
消防法最大保有KG	物質属性が成分ではないときに設定。消防法の管理対象の場合設定。 対象外はNullを設定。消防法第4類の場合は最大保有量が1(ﾘｯﾄﾙ)であるが、入庫時に比重(kg/l)×最大保有量(l)で最大保有量(kg)を求める
管理廃棄量割合	使用後に廃棄庫に廃棄される割合
環境排出量割合(大気)	使用時に大気に排出される割合
環境排出量割合(水)	使用時に水質に排出される割合
環境排出量割合(土壌)	使用時に土壌に排出される割合
化学変化量割合	使用時に化学変化して他の物質に変る割合
ﾘｻｲｸﾙ量割合	使用時にﾘｻｲｸﾙされる割合
搬出量割合	製品に含有されて外へ搬出される割合
ｺﾒﾝﾄ	
ｵﾌﾟｼｮﾝ情報	ｵﾌﾟｼｮﾝで設定する履歴情報
入庫者ID	保有ﾃｰﾌﾞﾙから引継ぎ
入庫者名	保有ﾃｰﾌﾞﾙから引継ぎ
入庫日時	保有ﾃｰﾌﾞﾙから引継ぎ
登録日時	ﾚｺｰﾄﾞを登録した日時
処理日	処理を行った日
消防法係数	保有量÷消防法最大保有KG
重み付け値	環境負荷指数

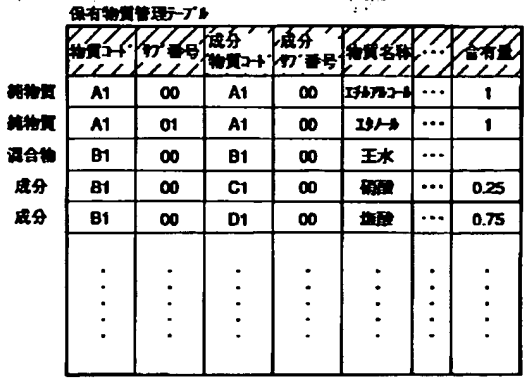
【図12】



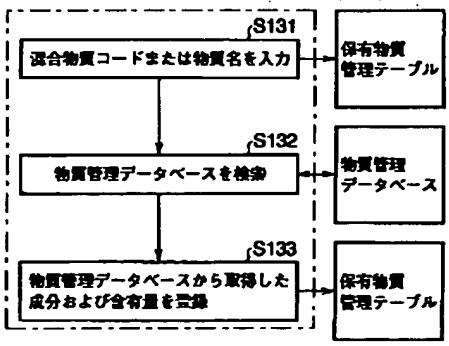
【図13】



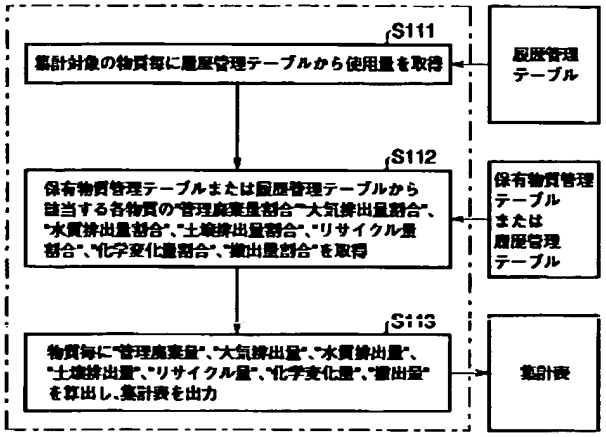
【図18】



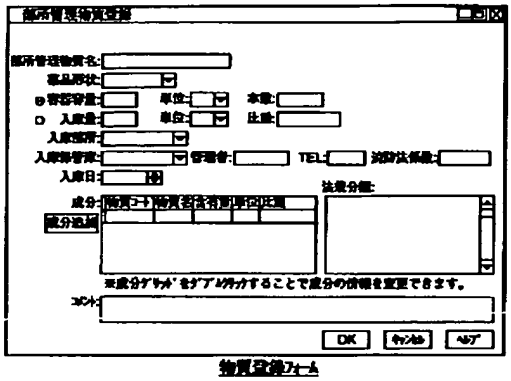
【図19】



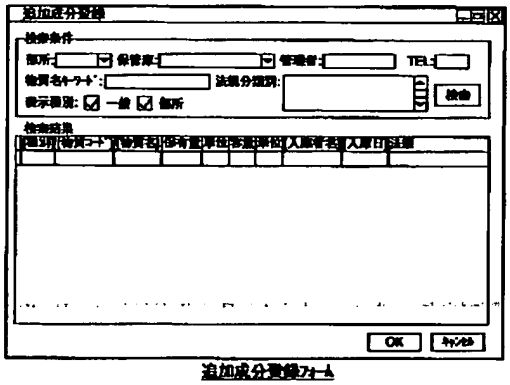
【図15】



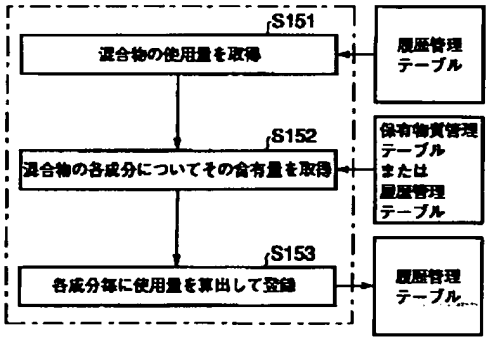
【図20】



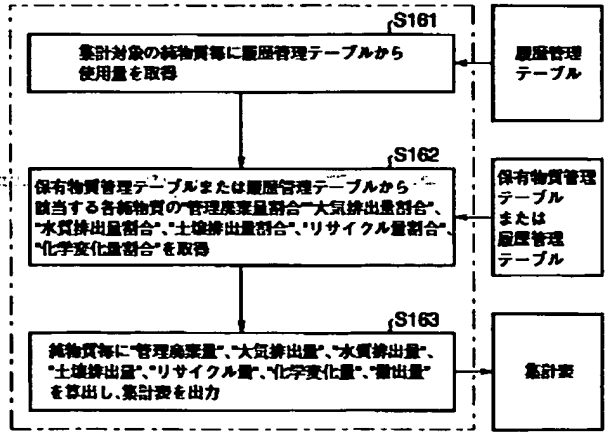
【図22】



【図23】



【図24】



【図28】

物質コードテーブル

物質コード	並び付け値

【図31】

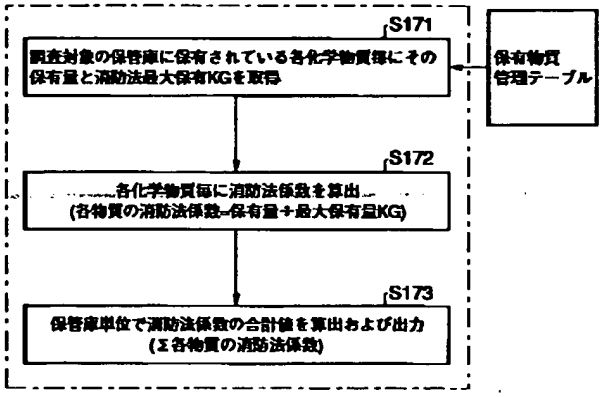
保管庫	メンテナンス対象容器	メンテナンスサイクル	前回メンテナンス実行日時
⋮	⋮	⋮	⋮

【図25】

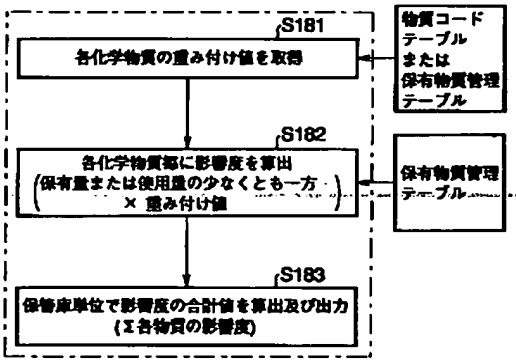
法規分類コードマスタテーブル

法規分類コード	法規分類名	消防法管理区分	消防法最大保有KG	消防法最大保有L	登録日時	更新日時

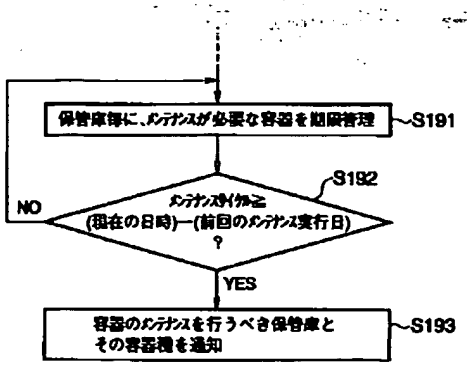
【図27】



【図29】



【図32】

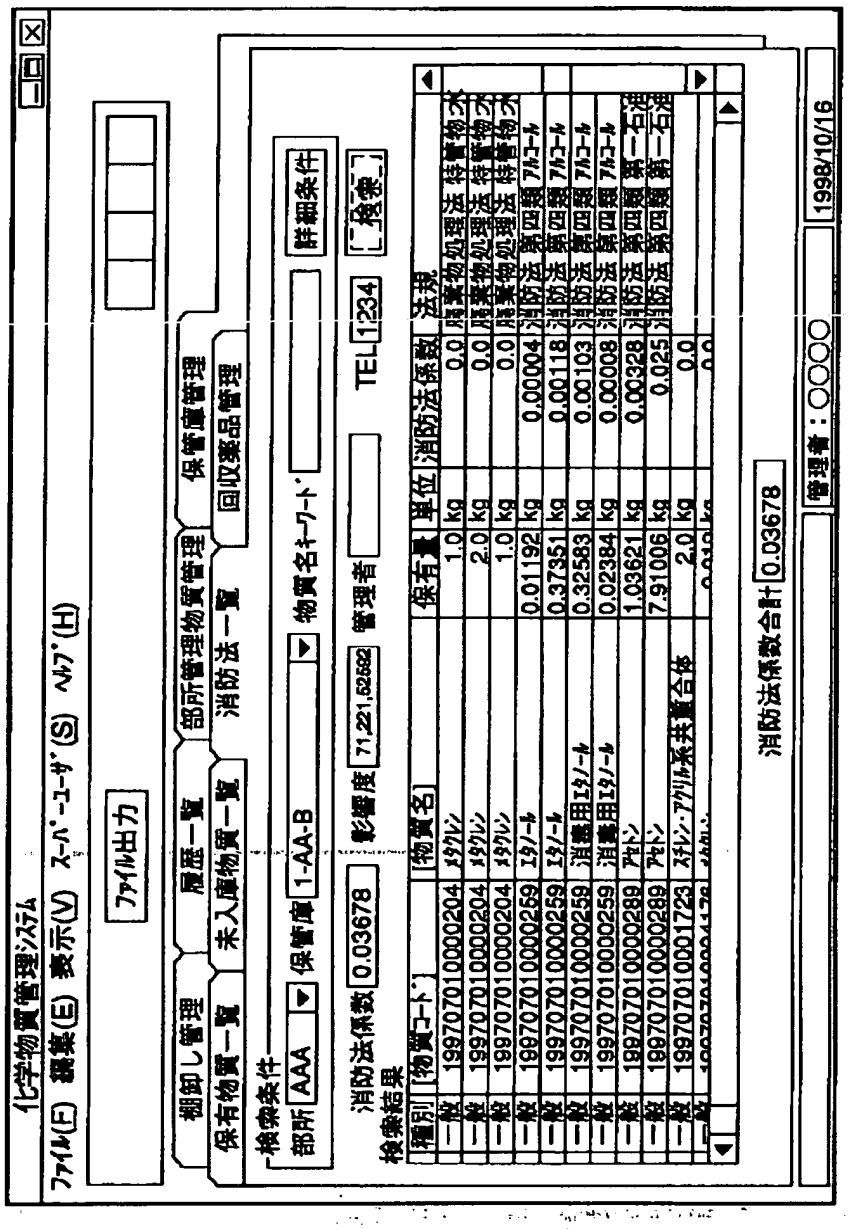


【図33】

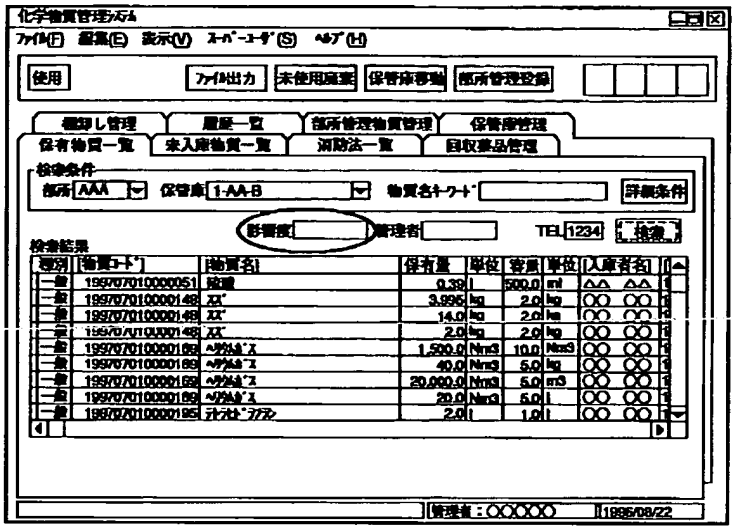
物質コード対応表

本化学物質管理システムの物質コード	行政(県)の物質コード	行政(市)の物質コード	その他で規定された物質コード
⋮	⋮	⋮	⋮

【図26】


化学物質管理システム
ファイル(F) 編集(E) 表示(V) ユーザー(S) ヘルプ(H)
ファイル出力
棚卸し管理
履歴一覧
部所管理物質管理
保管庫管理
保有物質一覧
未入庫物質一覧
消防法一覧
回収薬品管理
検索条件
部所 AAA
保管庫 1-AA-B
物質名キーワード
詳細条件
検索
消防法係数 0.03678
影響度 71,221,52582
管理者
TEL 1234
検索結果
種別 物質コード 物質名 保有量 単位 消防法係数 法規
一般 1997070100000204 メタクレン 1.0 kg 0.0 危険物処理法 特定物質
一般 1997070100000204 メタクレン 2.0 kg 0.0 危険物処理法 特定物質
一般 1997070100000204 メタクレン 1.0 kg 0.0 危険物処理法 特定物質
一般 1997070100000269 エタノール 0.01192 kg 0.00004 消防法 第四類 アルコール
一般 1997070100000269 エタノール 0.37351 kg 0.00118 消防法 第四類 アルコール
一般 1997070100000259 消毒用エタノール 0.32583 kg 0.00103 消防法 第四類 アルコール
一般 1997070100000259 消毒用エタノール 0.02384 kg 0.00008 消防法 第四類 アルコール
一般 1997070100000289 アセトン 1.03621 kg 0.00328 消防法 第四類 第一石油
一般 1997070100000289 アセトン 7.91006 kg 0.025 消防法 第四類 第一石油
一般 1997070100001723 スチレン・アクリル系共重合体 2.0 kg 0.0
消防法係数合計 0.03678
管理者：○○○○
1998/10/16

【図30】



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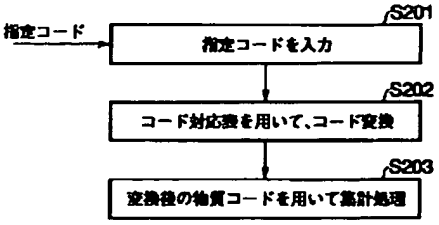
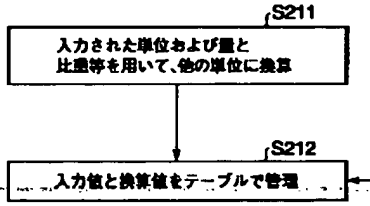


【図35】

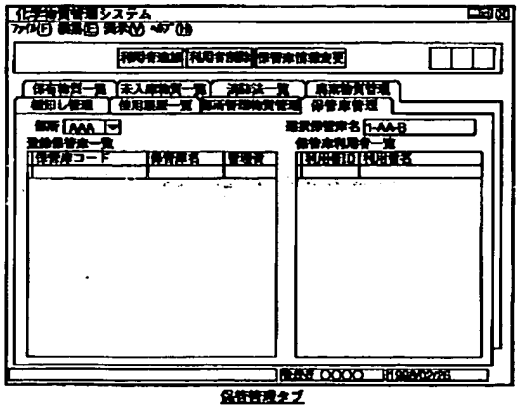


【図36】

保有物質管理テーブル
または
履歴テーブル

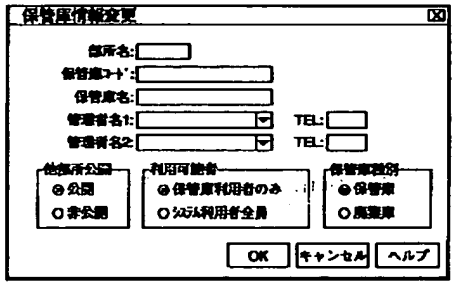
保管庫	有害物質の有無	ユーザによる保有物質検索
A	無	可
B	無	可
C	有	不可			

【図37】



保管管理タブ

【図38】



保管庫情報変更フォーム

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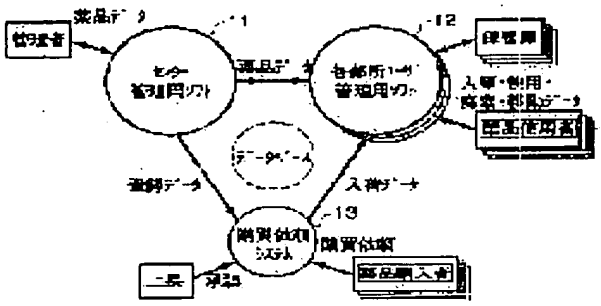
(54) SYSTEM AND METHOD FOR MANAGING CHEMICAL SUBSTANCES AND RECORDING MEDIUM

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an ideal chemical substance

managing system capable of speedily and easily investigating influences to be exerted upon natural environments or safety by summing up environmental discharges based on a used quantity for each chemical substance and the environmental discharge ratio of that chemical substance.



SOLUTION: Data are inputted from a chemical user himself by a software 12 for user management for managing the used chemical substance and on the side of center, while using a software H for center management, based on these input data, the history management of stock, use, abandonment and movement or the like, summing-up and report preparation or the like are performed. Thus, the environmental discharges generated as a result of contained materials, environmental influence degree latent in contained materials and further the coefficient of the fire laws can be multi-laterally managed/summed up. Namely, since almost all the required parameters are registered and managed, concerning the influences upon natural environments or safety, statistic values can be easily found from various viewpoints.

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[Date of extinction of right]

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CLAIMS

[Claim(s)]
[Claim 1] The chemical managerial system which is characterized by providing the following and which manages [abandonment / warehousing of a chemical, use, movement,] either at least using the database of a computer The matter management tool which manages the held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical A means to manage the amount used for every aforementioned chemical A total processing means to total an environmental discharge based on the amount used and the environmental discharge rate of a chemical for every aforementioned chemical
[Claim 2] The chemical managerial system according to claim 1 which searches the aforementioned use table, acquires any one environmental discharge rate of the atmosphere, water, and the soil at least, and is characterized by the thing corresponding to the chemical kind and the use use by which the input was carried out [aforementioned] for which the acquired environmental discharge rate is registered into the aforementioned matter managed table when it has the following and a chemical kind and a use use are inputted into the aforementioned matter managed table. The aforementioned matter management tool is the chemical kind for every aforementioned chemical. Use use The matter managed table on which the field for managing any one environmental discharge rate of the atmosphere, water, and the soil at least was defined It is the atmosphere, the water, and the use table showing any one environmental discharge rate of the soil of each chemical at least for every use use.
[Claim 3] The chemical managerial system characterized by providing the following. A means to manage the amount of warehousing of a chemical, the amount of intact possession, the amount of intact abandonment, and the amount

of used recovery abandonment in chemical managerial systems which manage either at least, such as warehousing of a chemical, use, movement, and abandonment, using the database of a computer, respectively The held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical A total processing means to total an environmental discharge based on the remainder which subtracted the aforementioned amount of intact possession, the aforementioned amount of intact abandonment, and the aforementioned amount of used recovery abandonment from the aforementioned amount of warehousing, respectively

[Claim 4] The aforementioned total processing means is the chemical managerial system according to claim 3 characterized by to use this computed actual amount of abandonment for the total of the aforementioned environmental discharge using the impurity coefficient which is determined by the matter kind and its use use of the aforementioned chemical, and which is contained in the waste of the chemical, including further a means compute the actual amount of abandonment excluding the impurity from the aforementioned amount of used recovery abandonment.

[Claim 5] In the chemical management method which manages [abandonment / warehousing of a chemical, use, movement,] either at least using the database of a computer The environmental discharge rate which is held using the aforementioned database and which is beforehand determined according to predetermined conditions for every chemical, The chemical management method characterized by managing the amount of the chemical used and totaling an environmental discharge based on the amount of each aforementioned possession chemical used, and the environmental discharge rate corresponding to the chemical.

[Claim 6] In the aforementioned database, for every aforementioned chemical, the chemical kind and a use use, The matter managed table on which the field for managing any one environmental discharge rate of the atmosphere, water, and the soil at least was defined, When the atmosphere, the water, and the use table showing any one environmental discharge rate of the soil of each chemical are prepared and a chemical kind and a use use are inputted into the aforementioned matter managed table at least for every use use, Search the aforementioned use table, correspond to the chemical kind and use use by which the input was carried out [aforementioned], and even if few, the atmosphere, The chemical management method according to claim 5 characterized by acquiring any one environmental discharge rate of water and the soil, and registering the acquired environmental discharge rate into the aforementioned matter managed table.

[Claim 7] In the chemical management method which manages [abandonment /

warehousing of a chemical, use, movement,] either at least using the database of a computer The environmental discharge rate which manages the amount of warehousing of a chemical, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment, respectively, and holds them using the aforementioned database and which is beforehand determined according to predetermined conditions for every chemical, The chemical management method characterized by totaling an environmental discharge based on the remainder which subtracted the aforementioned amount of intact possession, the aforementioned amount of intact abandonment, and the aforementioned amount of used recovery abandonment from the aforementioned amount of warehousing, respectively.

[Claim 8] The chemical management method according to claim 7 characterized by computing the actual amount of abandonment excluding the impurity from the aforementioned amount of used recovery abandonment, and using this computed actual amount of abandonment for the total of the aforementioned environmental discharge using the impurity coefficient which is determined by the matter kind and its use use of the aforementioned chemical, and which is contained in the waste of the chemical.

[Claim 9] The record medium which is characterized by providing the following and with which computer programs which manage either at least, such as warehousing of a chemical, use, movement, and abandonment, were recorded using the database The aforementioned computer program is a held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical using the aforementioned database. The procedure of managing the amount of the chemical used Total procedure which totals an environmental discharge based on the amount of each aforementioned possession chemical used, and the environmental discharge rate corresponding to the chemical

[Claim 10] In the aforementioned database, for every aforementioned chemical, the chemical kind and a use use, The matter managed table on which the field for managing any one environmental discharge rate of the atmosphere, water, and the soil at least was defined, The atmosphere, the water, and the use table showing any one environmental discharge rate of the soil of each chemical are prepared at least for every use use. the aforementioned computer program When a chemical kind and a use use are inputted into the aforementioned matter managed table, Search the aforementioned use table, correspond to the chemical kind and use use by which the input was carried out [aforementioned], and even if few, the atmosphere, The record medium according to claim 9 characterized by providing further the procedure of acquiring any one environmental discharge rate of water

and the soil, and registering the acquired environmental discharge rate into the aforementioned matter managed table.

[Claim 11] The record medium characterized by providing the following. It is the procedure in which the aforementioned computer program manages the amount of warehousing of a chemical, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment using the aforementioned database in the record medium with which computer programs which manage either at least, such as warehousing of a chemical, use, movement, and abandonment, were recorded, respectively, using a database. The held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical The procedure which totals an environmental discharge based on the remainder which subtracted the aforementioned amount of intact possession, the aforementioned amount of intact abandonment, and the aforementioned amount of used recovery abandonment from the aforementioned amount of warehousing, respectively

[Claim 12] The aforementioned computer program is a record medium according to claim 11 characterized by providing further the procedure which computes the actual amount of abandonment excluding the impurity from the aforementioned amount of used recovery abandonment using the impurity coefficient which is determined by the matter kind and its use use of the aforementioned chemical, and which is contained in the waste of the chemical, and using this computed actual amount of abandonment for the total of the aforementioned environmental discharge.

[Claim 13] The chemical managerial system which is equipped with the following and characterized by being constituted so that a possession chemical can be managed per pure substance and which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. The matter managed table for managing the component matter and the content of the component matter for every held chemical A means to search the component information by which the component matter and content are defined for every quality of mixture, and to register into the aforementioned matter managed table the component matter and content corresponding to the quality of mixture by which the input was carried out [aforementioned] when the information about the quality of mixture is inputted to the aforementioned matter managed table

[Claim 14] Based on a means to manage the amount used for every aforementioned chemical, and the component matter contained in the amount used and the chemical of each aforementioned chemical and its content, the amount used is computed per pure substance. That it is few as being beforehand determined by the computed amount used, and the kind and its use use of each

pure substance The atmosphere, The chemical managerial system according to claim 13 characterized by providing further a total processing means to total any one environmental discharge of the atmosphere, water, and the soil at least based on any one environmental discharge rate of water and the soil.

[Claim 15] In the chemical management method which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer When the component matter and the content of the component matter are managed and the information about the quality of mixture is inputted to the aforementioned matter managed table using the matter managed table of the aforementioned database for every held chemical, The component information by which the component matter and content are defined for every quality of mixture is searched. The chemical management method characterized by registering into the aforementioned matter managed table the component matter and content corresponding to the quality of mixture by which the input was carried out [aforementioned], and managing the aforementioned possession chemical per pure substance using the aforementioned matter managed table.

[Claim 16] The chemical managerial system which is characterized by providing the following and which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer It is the amount of possession for every held chemical. A means to manage the amount of the maximum possession specified with the regulation which has regulated the handling of the chemical A safe index calculation means to compute the rate of the amount of possession of the regulation matter to the amount of the maximum possession specified with the aforementioned regulation, and to output the calculation result as a safe index

[Claim 17] The chemical managerial system according to claim 16 characterized by providing the following. The aforementioned safe index calculation means is a means to compute the rate of the amount of possession to the amount of the maximum possession as a safe index of the matter for every chemical currently kept in the storage warehouse set as the investigation object of a safe index. A means to accumulate the safe index corresponding to each chemical managed in the storage warehouse for [aforementioned] investigation, and to output the accumulation result as a safe index of the storage warehouse for [aforementioned] investigation

[Claim 18] In the chemical management method which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer Using the aforementioned database, for every held chemical The amount of possession, The chemical management method characterized by managing the amount of the maximum possession specified with the regulation which has

regulated the handling of the chemical, computing the rate of the amount of possession of the regulation matter to the amount of the maximum possession specified with the aforementioned regulation, and outputting the calculation result as a safe index.

[Claim 19] The chemical managerial system which is characterized by providing the following and which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer A means hold to manage the amount of possession or amount used at least for every chemical The weighting factor beforehand decided according to the degree of the influence to the environment which the chemical does for every chemical An environmental load index calculation means to compute the degree of influence to the environment of each aforementioned possession chemical which the aforementioned possession chemical does based on the amount of possession, or the amount used at least, and to output the calculation result as an environmental load index of the aforementioned possession chemical

[Claim 20] The chemical managerial system according to claim 19 characterized by providing the following. The aforementioned environmental load index calculation means is the amount of possession, or the amount used at least for every chemical currently kept in the storage warehouse set as the investigation object of an environmental load index. A means to compute a product with a weighting factor as an environmental load index of the matter A means to accumulate the environmental load index corresponding to each chemical managed in the storage warehouse for [aforementioned] investigation, and to output the accumulation result as an environmental load index of the storage warehouse for [aforementioned] investigation .

[Claim 21] In the chemical management method which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer The weighting factor beforehand decided according to the degree of the influence to the held environment which manages the amount of possession or amount used at least for every chemical, and the chemical does for every chemical using the aforementioned database, The chemical management method characterized by computing the degree of influence to the environment of each aforementioned possession chemical which the aforementioned possession chemical does based on the amount of possession, or the amount used at least, and outputting the calculation result as an environmental load index of the aforementioned possession chemical.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the management method and record medium of the chemical managerial system which has a function for managing the influence and the safety especially to natural environment, and the assimilation study matter about the management method and record medium of the chemical managerial system for managing chemicals, such as a chemical and gas, and the assimilation study matter.
[0002]
[Description of the Prior Art] In recent years, the safety control about various chemicals, such as a chemical and gas, is improved by the social rise to global environment problems. Then, also in Japan, the legislation work of nature eccrisis of environmental pollutant / move registration system (PRTR:Pollutant Releaseand Transfer Register) is done. PRTR is the system where a company investigates itself the chemical currently used in the place of business etc., and an administrative body releases it. The amount of the chemical discharged to natural environment, such as the atmosphere and a river, the amount which moves out of a place of business as waste serve as a candidate for an official announcement.
[0003] However, in the present condition, the simple thing of the system for the chemical management used in the company having many which made stock control the key objective, for example, performing inventory investigation of the quality of a regulation object for every part situation within a station in paper, and inputting those data into a computer after collection by the help is almost the case. Moreover, since a chemical usually purchases in many cases by the chemical name etc., the management unit is also a chemical name unit, and it is not carried out in many cases by management in the component matter unit about mixture. For this reason, it is difficult to investigate correctly the amount of the

chemical discharged to natural environment in the present system in practice.
[0004] Moreover, in the present condition, since there was no structure for a company investigating statistically the safety of the chemical held in the place of business etc., the environmental load by the possession chemical, etc., only the safety control based on the ambiguous index by experience of a manager etc. was able to be performed.
[Problem(s) to be Solved by the Invention] As mentioned above, it was difficult to manage correctly the amount of the chemical which the function for computing statistically influence, safety, etc. which are exerted on natural environment in the conventional system is not prepared, but is discharged to natural environment, an environmental load, safety, etc. In research facilities which treat the chemical of small quantity many forms especially, such as a lab of a company, and a university, it becomes huge [the amount of the data for management], and many efforts are needed for the management.
[0005] this invention is made in view of such a point, and it aims at offering the management method and record medium of the ideal chemical managerial system which can investigate the influence affect natural environment, and safety quickly and simply, and the assimilation study matter.
[0006]
[Means for Solving the Problem] In the chemical managerial system with which this invention manages [abandonment / warehousing of a chemical, use, movement,] either at least using the database of a computer in order to solve an above-mentioned technical problem The matter management tool which manages the held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical, It is characterized by providing a total processing means to total an environmental discharge, based on a means to manage the amount used for every aforementioned chemical, and the amount used and the environmental discharge rate of a chemical for every aforementioned chemical.
[0007] The environmental discharge rate (for example, environmental discharge rate to the atmosphere, water, soil, etc.) for every chemical perceived the conditions beforehand determined according to predetermined conditions, for example, the point determined by the matter kind and its use use, and this invention has modeled and managed the environmental discharge rate with the parameter decided by the matter kind and its use use. Thus, if the environmental discharge rate to the atmosphere determined by the matter kind and its use use, water, soil, etc. is managed for every matter, the rest can only perform easy total processing in which the multiplication of these environmental discharge rate is carried out to the amount of each matter used, and can calculate the

environmental discharge to the atmosphere, water, soil, etc. easily.
[0008] Moreover, the matter managed table on which a chemical kind, a use use, and the field for managing any one environmental discharge rate of the atmosphere, water, and the soil at least were defined as the database, When the atmosphere, the water, and the use table showing any one environmental discharge rate of the soil of each chemical are prepared and a chemical kind and a use use are inputted into the aforementioned matter managed table at least for every use use, The thing which search the aforementioned use table and corresponds to the chemical kind and use use by which the input was carried out [aforementioned] and which is constituted so that any one environmental discharge rate of the atmosphere, water, and the soil may be acquired at least and the acquired environmental discharge rate may be registered into the aforementioned matter managed table is desirable.
[0009] Thereby, since automation of the input of the environmental discharge rate to a matter managed table can be attained, it becomes possible to arrange the required parameter on a matter managed table only by inputting a matter kind and a use use. Therefore, also in the research facilities which treat the chemical of small quantity many forms for various uses, total processing for an input and environmental discharge calculation can be performed efficiently.
[0010] a basis -- a **** environmental discharge rate may be determined as a default on a database at the time of data registration, and you may enable it to correct it according to various situations at the time of a data input at any time
[0011] Moreover, this invention is set using the database of a computer to chemical managerial systems which manage either at least, such as warehousing of a chemical, use, movement, and abandonment. A means to manage the amount of warehousing of a chemical, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment, respectively, The held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical, It is characterized by providing a total processing means to total an environmental discharge, based on the remainder which subtracted the aforementioned amount of intact possession, the aforementioned amount of intact abandonment, and the aforementioned amount of used recovery abandonment from the aforementioned amount of warehousing, respectively.
[0012] At the works where the use use of a chemical was defined beforehand, the environmental discharge rate to the atmosphere, water, soil, etc. can be beforehand determined for every chemical. For this reason, the amount in which the rest subtracted them from the amount of warehousing by managing neither the use nor an environmental discharge rate on a table for every chemical when

only things to which an amount is clearly manageable, such as the amount of warehousing, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment, managed can be calculated, and an environmental discharge can be totaled by carrying out the multiplication of the environmental discharge rate to the atmosphere, water, soil, etc. to it

[0013] In this case, it is desirable to establish further a means to compute the actual amount of abandonment excluding the impurity from the aforementioned amount of used recovery abandonment, using the impurity coefficient which is determined as a total processing means by the matter kind and its use use of the aforementioned chemical and which is contained in the waste of the chemical, and to use this computed actual amount of abandonment for the total of the aforementioned environmental discharge. Thus, a more exact environmental discharge can be calculated by calculating an environmental discharge in consideration of existence of the impurity contained in the waste of a chemical.

[0014] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. When the information about the quality of mixture is inputted to the matter managed table for managing the component matter and the content of the component matter, and the aforementioned matter managed table for every held chemical, The component information by which the component matter and content are defined for every quality of mixture is searched. A means to register into the aforementioned matter managed table the component matter and content corresponding to the quality of mixture by which the input was carried out [aforementioned] is provided, and it is characterized by being constituted so that a possession chemical can be managed per pure substance.

[0015] Thus, it becomes possible by carrying out automatic registration of the component matter and content to a matter managed table about the quality of mixture to be able to perform now management in a pure-substance unit easily, and to perform the total of an environmental discharge etc. per pure substance.

[0016] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. A means to manage the amount of the maximum possession specified with the held regulation which has regulated the amount of possession, and the handling of the chemical for every chemical, The rate of the amount of possession of the regulation matter to the amount of the maximum possession specified with the aforementioned regulation is computed, and it is characterized by providing a safe index calculation means to output the calculation result as a safe index.

[0017] In this invention, the amount of possession to the amount of the maximum

possession specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, boils the safe index showing the degree of safety comparatively, therefore it is modeled, and it enables this to ask for the safe index of the storage warehouse for keeping a chemical etc. statistically by calculation.

[0018] Since the values of the amount of the maximum possession specified legally generally differ for every chemical, moreover, a safe index calculation means A means to compute the rate of the amount of possession to the amount of the maximum possession specified with the regulation which is kept in the storage warehouse set as the investigation object of a safe index, and which has regulated the handling of the chemical for every chemical as a safe index of the matter, It is desirable to realize by means to accumulate the safe index corresponding to each chemical managed in the storage warehouse for [aforementioned] investigation, and to output the accumulation result as a safe index of the storage warehouse for [aforementioned] investigation. Thereby, even when the matter of many forms is held by the storage warehouse, it becomes possible to grasp the degree of safe of the storage warehouse exactly.

[0019] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. A means hold to manage the amount of possession or amount used at least for every chemical, The weighting factor beforehand decided according to the degree of the influence to the environment which the chemical does for every chemical, The degree of influence to the environment of each aforementioned possession chemical which the aforementioned possession chemical does based on the amount of possession or the amount used at least is computed, and it is characterized by providing an environmental load index calculation means to output the calculation result as an environmental load index of the aforementioned possession chemical.

[0020] In this invention, the environmental load index of each chemical is modeled using the amount of possession or the amount used, and the weighting factor corresponding to the chemical of a chemical at least, and the value of the weighting factor becomes large like the large chemical of the influence to environment. Thus, it becomes possible only by modeling using the weighting factor performing easy calculation of accumulating the product of the amount of possession or the amount used, and a weighting factor for every matter at least to grasp an environmental load exactly.

[0021]

[Embodiments of the Invention] Hereafter, the operation form of this invention is explained with reference to a drawing.

[0022] [The 1st operation form]
(System configuration) The composition of the chemical managerial system concerning the 1st operation form of this invention is shown in drawing 1 . This chemical managerial system is for managing warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer, and is built based on the relational database system of a client / server model. The application program 11 for pin center,large management (pin center,large managed software) which the manager of the pin center,large which is an agency having charge uses for this system, and the application 12 for user managements (software for user managements) which the chemical user of each part place uses realize. The client pewter by the side of the pin center,large where pin center,large managed software 11 is performed, and the client computer of each part place where software 12 for user managements is performed are connected through the network, and the data (chemical data) obtained from each part place are managed with the pin center,large managed software 11. That is, the chemical user himself performs the data input for managing the used chemical etc. with the software 12 for user managements, and history management of warehousing, use, abandonment, movement, etc., a total, creation of a report, etc. are performed in a pin center,large side based on these input data using the pin center,large managed software 11. In addition, a batch program may be made to perform a total by server computer separately. Moreover, the software 12 refernce of the contents of the database managed with the pin center,large managed software 11 can be carried out for user managements. Fundamentally, although software 12 for user managements is premised on use in the state where online connection was made to the computer network, the software 12 for user managements can also be used for it by the offline state by the function which carries out the cash advance of some contents of a database to the local storage of the computer of each part place, and the data synchronous function between the computer of each part place, and the server computer of a pin center,large.
[0023] The main function managers of the pin center,large managed software 11 are management (new registration, change, deletion) of management codes, such as - matter code and a storage warehouse code.
- It is creation of purchase history management / report data of the history management and the chemical of use of the chemical of the grasp and each user of the present amount of possession of a chemical, abandonment, and movement.
[0024] The main function managers of the software 12 for user managements are move management between the storage warehouses of the management and the chemical of the amount of - chemical used, and the amount of abandonment (chemical expenditure is included).

- Stocktaking management of Fire Service Law management / storage warehouse of the registration and each storage warehouse of the warehousing Management Department place managed matter to the storage warehouse of a purchase chemical (only storage warehouse manager)
- Recovery management of a recovery matter interim storage warehouse (only recovery matter interim storage warehouse manager)
It comes out.
[0025] Moreover, this chemical managerial system is purchase regulation (recognition of a superior is required) of - non-registered chemical by cooperation with the purchase request system 13 by which management management is carried out at a material-control part etc. for matter purchase.
- The purchase of a chemical and acquisition of acceptance information can be performed.
[0026] (Function) The functional composition of this chemical managerial system is notionally shown in drawing 2 .
[0027] (1) The warehousing processing for managing warehousing processing warehousing is database operation which is needed when keeping chemicals which obtained the purchase request to the arrangements request system 13, and were purchased, such as a chemical and gas, in the chemical storage warehouse of the corresponding part. It is notified to the software 12 for user managements by arrival-of-goods data from the arrangements request system 13 that the chemical by which the purchase request was carried out arrived. The screen (warehousing matter add interface) for inputting the information of the stocked chemical name, its amount of warehousing, a warehousing day, a warehousing person, etc. into a database with the software 12 for user managements is offered, and input process by the user is performed on the screen. The example of a screen of this warehousing matter add interface is shown in drawing 3 . The meaning of each field is as follows.
[0028]
<Request number>: The request number at the time of an arrangements request A part with the storage warehouse to stock selection <storage warehouse>:warehousing The unit specified at the time of the amount <unit>:arrangements request ordered by the chemical name <order quantity>:arrangements request which carried out the arranged <arrangements day>:date <acceptance day>:date <warehousing matter name>:arrangements request which was accepted <a warehousing part> : the storage warehouse to carry out Selection <a manager>: The manager name of the storage warehouse of which selection was done <TEL>: The extension number of the manager of the

selected storage warehouse
<Warehousing day>: The date which registered the matter into the storage warehouse (usually registered day)
<Fire Service Law coefficient>: Display the Fire Service Law coefficient of the selected storage warehouse. The Fire Service Law coefficient is a parameter which shows the rate over the amount of the maximum possession regulated by Fire Service Law of the selected storage warehouse, and the detail is mentioned later.
[0029] < matter configuration >: -- when the matter needs to be managed by the capacity of the <container capacity>:container which chooses the gestalt of matter management of a solid-state, a liquid, gas, etc., the radio button here is chosen, and capacity is inputted
[0030] A <number> which chooses a capacity unit when managing by <unit>:container capacity: When managing by container capacity, input the number of a container. A <unit> which chooses the radio button here when a container capacity x number does not manage by the amount of warehousing, and the becoming <amount [of warehousing]>:container capacity, and inputs the amount of warehousing: It is the unit (ml, l, g, kg, Nm3) of the amount of warehousing.
<Specific gravity>: Specific gravity of the selected matter. it checks, when registering the matter by the <management unit>:individual use used in order to carry out unit conversion so that the unit currently displayed may be suited and clarifying the person in charge of the matter -- for example Although the amount of arrival of goods can also be inputted in the form of container capacity =500ml and number =3 when three ethanol is arrived by 500ml bottle Such a container capacity unit not the amount of warehousing = it can input in the form of 1.5l., or can also input in the form of amount =of warehousing1.35kg. The automatic conversion function of a unit is prepared in this system, and no matter it may be inputted in what unit, the unit quantity is automatically changed into other units using a specific gravity value etc. It cannot be based on the kind of inputted unit by this, for example, management by default unit quantity, such as kg and Nm3, can be performed.
[0031] (2) movement between storage warehouses -- ****** -- when movement of a chemical is performed between chemical storage warehouses, the screen (move matter add interface) for inputting information, such as a moved matter name, and movement magnitude, move time, a movement place storage warehouse name, into a database is offered with the software 12 for user managements, and input process by the user is performed on the screen The example of a screen of this move matter add interface is shown in drawing 4 .

The meaning of each field is as follows.
[0032]
The <move day> which chooses the unit of <movement magnitude>:<unit>: <movement magnitude> : It registers with < warehousing storage warehouse >: <a warehousing part> which chooses a part with the <storage warehouse> which the <warehousing part name>:movement place which decides on the date which moved the matter with a spin button stocks. [which inputs the movement magnitude of the matter] A <manager> who chooses the storage warehouse stocked from a certain storage warehouse: Manager name of the selected storage warehouse <TEL> : Extension number of the manager of the selected storage warehouse
When the chemical held in (3) use processing chemical storage warehouse which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a warehousing storage warehouse> is used, processing which inputs information, such as the actually used amount used, is performed using the screen (use matter add interface) offered with the software 12 for user managements. A use history remains by this processing. If the matter used from the possession matter list display screen is chosen, a screen display of the use matter add interface will be carried out, and the input of information, such as the amount used, will be performed on the screen. The example of a screen of a use matter add interface is shown in drawing 5 . The meaning of each field is as follows.
[0033] The <amount used>: Input the amount of the matter used.
[0034]
The unit of < unit >: <the amount used> The <use day> to choose : the matter <Recovery matter interim-storage warehouse management> which sets up the used date with a spin button: "Nothing" that chooses the existence of recovery matter interim storage warehouse management with a radio button -- "**" which does not perform recovery matter management -- When < use form >: <recovery matter management> which performs recovery matter management is "**", "Whole-quantity abandonment" which chooses the use form of the matter -- "Continuation use" immediately discarded to a specification recovery matter interim storage warehouse after use (interim storage) -- When < recovery matter interim storage warehouse >: <a use form> treated as matter during use is "whole-quantity abandonment", When < abandonment container >: <a use form> which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a recovery matter interim storage warehouse> which chooses the recovery matter interim storage warehouse to discard is "whole-quantity abandonment", In addition it inputs the comment of the container to discard, a

recovery matter interim storage warehouse is one form of a storage warehouse, i.e., the storage warehouse only for tails.
[0035] (4) Although the chemical after recovery / disposal processing use has what is collected for recycling, and the thing which is moved to a recovery matter interim storage warehouse, and is discarded, processings (recovery processing, disposal processing), such as an input of the amount of recoveries and an input of the amount of disposal, are performed using the screen offered with the software 12 for user managements, respectively. In abandonment processing, if a tail is chosen from the list display screen of the matter during use, the screen of a tail add interface like drawing 6 will be displayed, and information, such as the amount of abandonment, will be inputted on the screen. The example of a screen of this tail add interface is shown in drawing 6 . The meaning of each field is as follows.
[0036]
A <use day> which chooses the unit of <amount [of abandonment]>:<unit>: <the amount of abandonment>: Set up the date which used the matter with a spin button (usually date on the day). [which inputs the amount of abandonment of the matter]
<Recovery matter interim-storage warehouse management>: "Nothing" that chooses the existence of recovery matter interim storage warehouse management with a radio button -- "**" which does not perform recovery matter management -- When < use gestalt >: <recovery matter management> which performs recovery matter management is "**", "Whole-quantity abandonment" which chooses the use gestalt of the matter -- "Continuation use" immediately discarded to a specification recovery matter interim storage warehouse after use (interim storage) -- When < recovery matter interim storage warehouse >: <a use gestalt> treated as matter during use is "whole-quantity abandonment", When < abandonment container >: <a use gestalt> which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a recovery matter interim storage warehouse> which chooses the recovery matter interim storage warehouse to discard is "whole-quantity abandonment", (5) total processing total processing in which the comment of the container to discard is inputted totals the information about the amount of disposal of a chemical, an environmental discharge, the amount of recycling, etc. using the data on a database, is processing for drawing up the report, and is performed by the pin center,large managed software 11. An environmental discharge shows the amount of chemicals discharged by use of a chemical to natural environment, and the discharge to the atmosphere, water, and each soil is calculated by total.

[0037] (Definition of the amount of managements) Next, with reference to drawing 7 , the definition of the amount of managements of the chemical in this chemical managerial system is explained.
[0038] - The amount which stocked the chemical by which the amount delivery of goods of warehousing was carried out in the chemical storage warehouse is shown.
[0039] - The amount of the chemical held in the possession quantification study matter storage warehouse is shown.
[0040] - The amount which used the amount-used possession chemical is shown. This amount used is an amount taken out from the chemical container managed in the storage warehouse, and is equivalent to the sum of the amount of disposal, an environmental discharge, the amount of recycling, the amount of chemical changes, and the amount of taking out. An environmental discharge is an amount discarded to the atmosphere, water, soil, etc., as mentioned above, and the amount by which this amount is discharged in the use stage of a possession chemical is almost the case. When a product is manufactured by use of a possession chemical, the amount contained for the product itself is also contained.
[0041] - When a product is manufactured by use of the amount possession chemical of taking out, the amount which contains for the product itself and is taken out outside from a manufacture site is shown.
[0042] - The amount which discarded the abandonment quantification study matter in the recovery matter interim storage warehouse. The chemical of a recovery matter interim storage warehouse has what is collected as a waste solvent, the thing sent to a waste-water-treatment place, and the thing collected as an unnecessary chemical (waste chemical).
[0043] - There are the amount of move leaving the garage and the amount of move warehousing in movement magnitude movement magnitude. The amount of move leaving the garage shows the amount which left the moved material by movement between storage warehouses of a chemical, and the amount of move warehousing shows the amount stocked at the movement place by movement between storage warehouses of a chemical.
[0044] (Management classification) Drawing 8 is drawing showing the management classification of the chemical in this chemical managerial system.
[0045] Like illustration, a chemical is divided into the pin center,large managed matter and the part managed matter, and is managed.
[0046] - By the chemical registered in the pin center,large managed matter pin center,large, a pin center,large manages only this matter.

[0047] - Matter which manages the chemical by which pin center,large registration is not carried out by being original with a registration part, such as matter which refined the part managed matter pin center,large managed matter, mixed, and came to hand as a sample. This matter manages only at the registered part and is not managed in the pin center,large.

[0048] For example, when the intermediate product C by which pin center,large registration is not carried out as the mixture is generated by mixing Chemicals A and B, part management is performed about the intermediate product C, and it is managed in the pin center,large about the chemicals A and B which are component matter of the intermediate product C.

[0049] (Management unit) Drawing 9 is drawing for explaining the management unit of the chemical in this chemical managerial system.

[0050] In this chemical managerial system, a peculiar matter code is assigned for every possession chemical, and a possession chemical is managed by the matter code unit. The example of the chemical for management is shown below.

[0051] 1) About various gas, such as 3 gas helium, such as chemical at large reagent 2 heavy chemicals, a chemistry material fluorescent substance, distilled water, a semiconductor chemical, an industrial use chemical, adhesives, adhesion liquid, dust cleanness, an etching chemical, other coal chemical products, and plating liquid, nitrogen, hydrogen, oxygen, an argon, semiconductor gas, acetylene, ammonia, and a nitrous oxide, a liquid object, and a possession chemical, management in a container capacity unit and a warehousing person unit is also performed.

[0052] - Container capacity unit management; manage in capacity of the container stocked in the storage warehouse.

[0053] - Warehousing person unit management : manage in the unit of container capacity with the warehousing person who stocked in the storage warehouse.

[0054] As mentioned above, the these-managed unit can choose either at the time of warehousing registration of a chemical, and can set it as it for every matter.

[0055] : (Environmental discharge management) The 1st example (example on the basis of the amount used)

Next, the structure for the environmental discharge management which is one of the important features of this operation form is explained.

[0056] First, the basic principle of the environmental discharge management on the basis of the amount of the chemical used is explained as the 1st example.

[0057] With this operation form, environmental discharge rates through which it passes, respectively, such as the environmental discharge rate for every chemical, for example, the atmosphere, water, and soil, have modeled and managed the environmental discharge rate with the parameter decided by the matter kind and

its use use using the point of being determined by for example, a matter kind and its use use (beforehand determined by predetermined conditions). That is, the matter kind (parameter which shows the matter itself, such as a matter name and a matter code), a use use and the atmosphere, water, soil, etc. manage the environmental discharge rate through which it passes, respectively about each held chemical using a database.

[0058] Thus, if environmental discharge rates through which it passes, respectively, such as the atmosphere determined by the matter kind and its use use, water, and soil, are managed, the rest can only perform easy total processing in which the multiplication of these environmental discharge rate is carried out to the amount of each chemical used, and can calculate easily environmental discharges through which it passes, respectively, such as the atmosphere, water, and soil. Hereafter, the suitable example for realizing this structure is explained.

[0059] (Possession matter managed table) The field composition of the possession matter managed table for managing the possession situation of the chemical in the storage warehouse of each part place is shown in drawing 10 . This possession matter managed table is the matter kind (parameter which shows the matter itself, such as a matter name and a matter code), and a use use (as a use use) about each held chemical. Besides pure uses, such as washing, also include conditions, such as temperature and a pressure, as an operating environment. and time (period) in environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, -- being spatial (a part unit, a storage warehouse unit, all a place, all storage warehouses, etc.) -- it is one of two or more of the tables which are used in order to manage, and constitute a relational database One record (one line) is assigned for each [which is held] chemical of every, and the field like illustration is defined as each record. Here, the explanation is given about some typical fields.

[0060] <Storage warehouse code>: The peculiar code of the storage warehouse which holds the corresponding chemical is shown. A storage warehouse code consists of the building number and room number which show the whereabouts of a storage warehouse, a storage warehouse number, etc. When two or more storage warehouses exist in one part by the this <storage warehouse code> field, it becomes possible to manage the influence to environment, safety, etc. in the storage warehouse unit.

[0061] The peculiar matter code assigned for <matter code>:each chemical of every <a sub number>: When the matter specified in the matter code of the component matter and <matter code> when the matter specified by code < component matter code >[for discriminating the chemical from which a matter name differs by the same matter species]: <a matter code> is mixture is a pure

substance, the same code as a <matter code> is set up.
[0062] The code for discriminating the chemical from which a matter name or a tradename differs by the <component sub number>:same matter species <a part management flag> : [whether it is the pin center,large managed matter and] The flag for discriminating whether it is the part management managed matter <a matter name> : A matter name, The code which shows the regulation which makes applicable to regulation the matter with which it is specified by identifier < regulation classification code >: <a matter code> which discriminates its matter name <matter attribute>:pure substance and compound / mixture / component matter in the case of the component matter <a storage warehouse management flag> : [whether it is individual management and] flag < warehousing person name >: which shows whether it is management in a storage warehouse unit -- name < warehousing time >: of the person who performed warehousing processing -- time < type >: which finally performed warehousing processing -- < which shows the attribute of a liquid, a solid-state, etc. -- the amounts of possession of use unit <amount of possession>:this time, such as use unit >:kg, ml, and the number, are shown This value is fluctuated by warehousing processing, use processing, etc.
[0063] The value which changed the amount of <amount [of possession] KG>:possession into kg, the value which changed into Nm3 in the case of gas <a content>: The content (content) of the component matter is shown. The <amount rate of management abandonment> which shows the amount of the maximum possession which is the value set up to the quality of a management object of <Fire Service Law maximum possession KG>:Fire Service Law used in case the amount of possession of the component matter is calculated, and can hold the matter safely in a specific zone : As opposed to the amount used The rate put in and managed after use in a recovery matter interim storage warehouse <an environmental discharge rate (atmosphere)> : As opposed to the amount used The rate discharged by the atmosphere by use <an environmental discharge rate(water)> : As opposed to the amount used The rate discharged by water quality by use <an environmental discharge rate (soil)> : As opposed to the amount used A rate reusable as recycling matter after the rate <amount rate of recycling>:use which changes chemically at the time of the rate <amount rate of chemical changes>:use discharged by soil, and changes with use to other matter <the amount of taking out> : when a product is manufactured by use of a possession chemical The code which shows the use use of the matter specified by amount <the way code to be used>: <a matter code> which contains for the product itself and is taken out outside from a manufacture site <the Fire Service Law coefficient>: The rate of the amount of matter possession to the amount of

the maximum possession regulated by Fire Service Law is shown. By accumulating this rate for every matter per storage warehouse, the Fire Service Law coefficient as a storage warehouse can be shown.
[0064] <Weighting value>: The environmental load index which shows the degree of the degree of influence to the environment of the corresponding matter. By accumulating the product of an environmental load index and the amount of possession for every matter per storage warehouse, an environmental load can be investigated per storage warehouse.
[0065] In this possession matter managed table, when a matter name is inputted, the matter code assigned beforehand is set automatically by the possession matter managed table. And when usage is inputted, the way table which is mentioned later and to be used is searched, the value of the environmental discharge rate to the atmosphere and water which are determined depending on the matter code and usage, and each soil, and the amount rate of chemical changes and the amount rate of recycling is acquired, and they are set automatically by the field where a possession matter managed table corresponds, respectively.
[0066] Moreover, about the method of use of the Fire Service Law coefficient and a weighting value, it mentions later.
[0067] (History table) The field composition of the history table for managing histories, such as the use and abandonment to the chemical held in each part place, and movement, is shown in drawing 11 . this history table is time in the amount used, the amount of abandonment, movement magnitude, etc. for every possession chemical (period) -- being spatial (a part unit, a storage warehouse unit, all a place, all storage warehouses, etc.) -- it is one of two or more of the tables which are used in order to manage, and constitute a relational database One record (one line) is assigned for each [which is held] chemical of every, and the field like illustration is defined as each record. Here, the explanation is given about some typical fields. In addition, the meaning of the field of the same name as a possession matter managed table is the same as it of a possession matter managed table.
[0068] < history classification >: -- the amount of increase and decrease of the amount of possession held in the <amount of increase and decrease>:storage warehouse used for discernment of processings, such as warehousing, movement, use, abandonment, and recovery, is shown When <history classification> shows "reduction by use", the value of <the amount of increase and decrease> turns into a value (minus) equivalent to the amount used, and the value of <the amount of increase and decrease> will show the amount used.
[0069] (Way table to be used) An example of the composition of a how [to use

the above-mentioned] table is shown in drawing 12 . This way table to be used is a table which defined the environmental discharge rate to the atmosphere of each chemical, water, and each soil, and the amount rate of recycling and the amount rate of chemical changes for every use use, and consists of two or more tables divided according to usage. Each usage table is associated in way code which is set as the how [to use the above-mentioned matter managed table] field and to be used. In each usage table, one record (one line) is assigned for every held chemical, and the field of a <matter code>, the <amount rate of management disposal>, the <amount rate of atmospheric exhausts>, a <water quality discharge rate>, a <soil discharge rate>, the <amount rate of recycling>, the <amount rate of chemical changes>, and the <amount rate of taking out> is defined as each record like illustration.

[0070] As mentioned above, the value of <the amount rate of atmospheric exhausts>, a <water quality discharge rate>, a <soil discharge rate>, the <amount rate of recycling>, the <amount rate of chemical changes>, and the <amount rate of taking out> can be beforehand decided by relation between a chemical and its usage. That is, what is necessary is just to register it into the way table which uses the forecast, since the coefficient value at what rate it is discharged by the atmosphere, water, and each soil at what rate, and a chemical change, the amount of taking out, and the amount of recycling arise can be beforehand expected depending on the property of the matter, and usage. Moreover, you may make it determine the value registered into the way table to be used, and which is used using the statistical data of the measured value by surveying the environmental discharge to the atmosphere about each of each matter, water, and each soil for every way about the environmental discharge rate to the atmosphere, water, and each soil.

[0071] The way code which uses the chemical of matter code =01 by illustrating the way table which corresponds to way code =01 to be used in drawing 12 , and to be used = when it is used for the use shown by 01, the example used as amount rate =of amount rate =of amount rate =of amount rate =of atmospheric exhausts 0.1 water-quality discharge rate =0 soil discharge rate =0 recycling 0 chemical changes 0 taking out 0 is shown.

[0072] Since the remainder which lengthened the total value of these rates from 1 serves as the amount rate of management abandonment discarded by the recovery matter interim storage warehouse, it is set to amount rate =of management abandonment 0.9.

[0073] Moreover, the way code which uses the chemical of matter code =02 = when it is used for the use shown by 01, the example used as amount rate =of

amount rate =of amount rate =of amount rate =of atmospheric exhausts 0.2 water-quality discharge rate =0.1 soil discharge rate =0 recycling 0 chemical changes 0.2 taking out 0 is shown. In this case, the amount rate of management abandonment = it is set to 0.5.

[0074] (Bills of quantities) An example of the bills of quantities obtained by total processing is shown in drawing 13 . These bills of quantities are used as a report for indicating an environmental discharge etc. to an administrative body etc., and are calculated using an above-mentioned possession matter managed table and an above-mentioned history table. Values, such as an inventory, the amount used, the amount of management disposal, movement magnitude, the amount of recycling, the amount of atmospheric exhausts, a water quality discharge, a soil discharge, the amount of chemical changes, and the amount of taking out, are included in bills of quantities for every possession chemical like illustration an inventory, the amount of warehousing, and this term the matter code, a matter name, a unit, and the first half.

[0075] (Acquisition of an environmental discharge rate) The procedure which acquires an environmental discharge rate from a use table automatically, and is registered into a possession matter managed table is shown in drawing 14 .

[0076] First, a matter code and the way code to be used are inputted into a possession matter managed table (Step S101). In this case, the work done by the help is the work which chooses a matter name from a matter name list menu, and work which chooses how to use from the way list menu to be used. The input of the matter code which corresponds automatically is performed by choosing a matter name.

[0077] Subsequently, reference of the way table which uses a matter code and the way code to be used as a key and to be used is performed, and the value of the amount rate of management disposal, the amount rate of atmospheric exhausts, a water-quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of chemical changes, and the amount rate of taking out is acquired from the record applicable to a matter code key in the way table corresponding to the way code key to be used to be used (

[0078] Then, automatic registration of the value of the acquired amount rate of management disposal, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of chemical changes, and the amount rate of taking out is carried out to the field position where a possession matter managed table corresponds (Step S103).

[0079] (Bills-of-quantities output) The procedure of the total processing for a bills-of-quantities output is shown in drawing 15 .

[0080] First, the time and spatial amount used about the chemical for a total is acquired from the amount field of increase and decrease of a history table (Step S111). Subsequently, the value of the management displacement rate about the corresponding matter, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of taking out, and the amount rate of chemical changes is acquired from a possession matter managed table or a history table (Step S112). This acquired amount used is classified into the following items.

[0081] "Amount-used" = "amount of management disposal" + "environmental discharge (atmosphere, water, soil)" +"amount of recycling"+ "the amount of chemical changes" + "the amount of taking out"

every [therefore,] chemical for a total -- "amount-used" x"amount rate of management abandonment" = "the amount of management abandonment"

"Amount-used" x "the amount rate of atmospheric exhausts" = "the amount of atmospheric exhausts"

"Amount-used" x "a water quality discharge rate" = "a water quality discharge"

"Amount-used" x "a soil discharge rate" = "a soil discharge"

"Amount-used" x "the amount rate of recycling" = "the amount of recycling"

"Amount-used" x "the amount rate of chemical changes" = "the amount of chemical changes"

"Amount-used" x "the amount rate of taking out" = "the amount of taking out"

By performing calculation to say, the value of "the amount of management disposal", the "amount of atmospheric exhausts", a "water quality discharge", a "soil discharge", the "amount of recycling" and the "amount of taking out" which should be outputted to bills of quantities, and the "amount of chemical changes" is computed (Step S113).

[0082] : (The 2nd example of environmental discharge management) The 2nd example of the management on the basis of the amount of abandonment, next environmental discharge management is explained.

[0083] Although the way and environmental discharge rate (the atmosphere, water, soil) to be used, the amount used, etc. were managed for every chemical in the above-mentioned example, this is a suitable management method for the research facilities which use the matter of small quantity many forms for various uses.

[0084] On the other hand, at the works where the use use of a chemical was defined beforehand, environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, the amount rate of chemical changes, the amount rate of recycling, and the amount rate of taking out can be beforehand determined uniquely for every chemical. For this reason, if the way or

environmental discharge rate to be used are not separately managed on a table but are performed separately using the history managed table of the above-mentioned [** / management of the amount of warehousing, the amount of the amount of intact / used /, and intact abandonment, and the amount of used recovery abandonment] for every chemical The rest in the amount which subtracted the amount of the amount of intact [used], and intact abandonment, and the amount of used recovery abandonment from the amount of warehousing If an environmental discharge can be totaled by carrying out the multiplication of the environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, and the multiplication of the amount rate of chemical changes, the amount rate of recycling, and the amount rate of taking out is carried out similarly, the amount of chemical changes, the amount of recycling, the amount of taking out, etc. can be totaled.

[0085] Since the impurity may be mixing by use processing, when the surveyed amount of abandonment is used as it is into the waste into which it was put in this case in the recovery matter interim storage warehouse, it may be able to stop however, being able to compute the right amount used. Therefore, it is desirable to compute the actual amount of abandonment excluding the impurity from the surveyed amount of abandonment using an impurity coefficient table as shown in drawing 16 .

[0086] The impurity coefficient table shown in drawing 16 corresponds to "usage" of specification with a chemical, and the value of an impurity coefficient, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, and the amount rate of chemical changes is registered here for every matter code like illustration. (The measured amount of abandonment) The actual amount of abandonment can be calculated by x (1-impurity coefficient).

[0087] (The 2nd example of a bills-of-quantities output) The procedure of the total processing corresponding to the 2nd example of environmental discharge management is shown in drawing 17 .

[0088] First, processing which computes the actual amount of abandonment is performed using the impurity coefficient table of drawing 16 (Step S121). As mentioned above in this processing, it is x (the measured amount of abandonment) (1-impurity coefficient).

The actual amount G of abandonment is calculated by ******.

[0089] Subsequently, the actual amount of abandonment (G) totaled in time and spatially is subtracted from the amount of warehousing (the amount of warehousing) totaled in time and spatially, and the amount of atmospheric exhausts, a water quality discharge, a soil discharge, the amount of chemical

changes, etc. are calculated by multiplying by values, such as the amount rate of atmospheric exhausts of the matter corresponding to the subtraction result, a water quality discharge rate, a soil discharge rate, and the amount rate of chemical changes, (Step S122).

[0090] In addition, it sets under a specific condition (the amount of warehousing). - (G)

** -- you may regard it as an environmental discharge fundamentally

[0091] As explained also in the 1st operation form of the [2nd operation form], for management of an environmental discharge, matter management in a pure-substance unit is needed. Here, the concrete structure of the pure-substance management is made to explain as the 2nd operation form. In addition, the basic composition of the chemical managerial system of a **** 2 operation form is the same as the 1st operation form. The (function), (a definition of the amount of managements) which were explained with the 1st operation form (system configuration), (Management classification), a (management unit), (environmental discharge management), a (possession matter managed table), A (history table), (the way table to be used), (bills of quantities), (acquisition of an environmental discharge rate), a (bills-of-quantities output), the (2nd example of environmental discharge management), and the (2nd example of a bills-of-quantities output) are applied to the 2nd operation form as it is.

[0092] (Possession matter managed table) Drawing 18 extracts and shows only the portion about pure-substance management in the possession matter managed table explained by drawing 10 of the 1st operation form. The meaning of each field of drawing 18 is as the 1st operation form having explained. About the pure substance, it is assignment of 1 matter 1 record, and the record is separately assigned about the quality of mixture (aqua regia) to the quality of mixture, and each component matter which constitutes it so that drawing 18 may show.

[0093] In drawing 18 , it is matter code =A1, sub number =00, component matter code =A1, component sub number =00, and content =1 about the ethyl alcohol which is a pure substance. Thus, in the case of a pure substance, a matter code and a component matter code become the same, and are set to content =1.

[0094] Although ethanol is the same matter as substantially as ethyl alcohol, it is matter with which names differ. Although a matter code is set to the A1 [same] as ethyl alcohol about this ethanol, a sub number serves as a different value 01 from ethyl alcohol. Moreover, a content is 1.

[0095] It is set to matter code =B1, sub number =00, component matter code =B1, and component sub number =00 about the aqua regia which is mixture. And the record of the nitric acid which is the component matter of an aqua regia, and a

hydrochloric acid is arranged at the record under it.

[0096] About the nitric acid which is the component matter, a matter code is set to the B1 [same] as an aqua regia, and is set to sub number =00, component matter code =C1, component sub number =00, and content =0.25. Content = 0.25 means that the nitric acid is contained in an aqua regia at a rate of 0.25. The value of the content of the component matter is used in order to calculate the amount of possession of the component matter from the amount of possession of the quality of mixture.

[0097] "Amount of possession of component matter" ="amount of possession of quality of mixture" x "the content of the component matter"

About the hydrochloric acid which is the 2nd component matter, a matter code is set to the B1 [same] as an aqua regia, and is set to sub number =00, component matter code =D1, component sub number =00, and content =0.75.

[0098] Thus, it becomes possible by managing the component matter and content on a possession matter managed table about the quality of mixture to be able to perform now management in a pure-substance unit easily, and to perform the total of an environmental discharge etc. per pure substance. Management of this pure-substance unit is similarly performed not only about a possession matter managed table but about a history table.

[0099] Moreover, what is necessary is just to register an environmental discharge rate (the atmosphere, water, soil) for every component matter of the at a possession matter managed table in the case of the quality of mixture, since information, such as an environmental discharge rate (the atmosphere, water, soil), is registered into the how [to use the above-mentioned] table per pure substance.

[0100] In addition, although the field about the component matter was not prepared in the record for managing each chemical here but the information about the component matter and the information about the quality of mixture are altogether managed as one record like other pure substances, this is because an environmental discharge can be calculated easily while preventing generating of the useless field.

[0101] The relation between each quality of mixture, its component matter, and a content is beforehand defined as the database called a matter management database. All possession chemicals are defined by the "matter managed table" unitary. In addition, this table is the same structure as a possession matter managed table. Therefore, if even the quality name of mixture is inputted, the rest can take out the information on the component matter from a matter management database, and can register it automatically. An example of this procedure is shown in the flow chart of drawing 19 .

[0102] If the nature code of mixture or the quality name of mixture is inputted by the user on the screen for performing matter registration as shown in drawing 19 (Step S131), reference of the matter management database which uses the nature code of mixture or the quality name of mixture as a key will be performed, and information, such as component matter and a content, will be acquired from a matter management database (Step S132). And these information is registered into a possession matter managed table (Step S133).
[0103] In addition, it displays on the screen for matter registration of the above-mentioned [information, such as component matter acquired from the matter management database, and a content,], and you may enable it to operate selection of a component, addition, change, or change of a content if needed. Since the quality of mixture obtained by mixing at a self-part also exists in the quality of mixture, it is because it is also considered that it cannot respond for the default component information defined as the component database.
[0104] (Matter registration screen) An example of a matter registration screen (matter add interface) is shown in drawing 20 . The meaning of each field is as follows.
[0105] <Part managed matter name>: The name of the matter registered at a part. The already registered name cannot be registered.
[0106]
< chemical configuration >: -- the configuration of a chemical -- selection < container capacity >: -- the number of a container is inputted when managing by the <number>:container capacity which chooses the radio button here when the matter needs to be managed by the capacity of a container, and chooses a capacity unit when managing by the <unit>:container capacity which inputs capacity The <amount of warehousing> from which a container capacity x number serves as the amount of warehousing : When not managing by container capacity, the radio button here is chosen. The manager name of the storage warehouse of which selection <a manager>:selection was done in the storage warehouse which does selection <a warehousing storage warehouse>:warehousing of a part with the storage warehouse which the registration matter makes <unit>:unit <specific gravity>:specific-gravity <a warehousing part>:warehousing of the amount of warehousing which inputs the amount of warehousing <TEL>: The extension number of the manager of the selected storage warehouse
< Fire Service Law coefficient >: -- Fire Service Law coefficient < warehousing day >: of the selected storage warehouse -- date < component >: which registered the matter into the storage warehouse -- a list indication of the information on a

component is given A double click of the part of component information to change displays a dialog screen for information change like drawing 21 (component information change form). Here, the content of the component in the matter to register, a unit, and specific gravity can be set up.

[0107] Moreover, if the "component addition" button of drawing 20 is clicked, a dialog screen for a component addition like drawing 22 (additional component add interface) is displayed, and additional registration of the component can be carried out there.

[0108] (The amount-used calculation of the component matter) The procedure for computing the amount of the component matter used is shown in drawing 23 .

[0109] First, the amount of the quality of mixture used is acquired from the amount field of increase and decrease of a history table (Step S151). Subsequently, the content of each component matter of the quality of mixture is acquired from a possession matter managed table or a history table (Step S152). And by carrying out the multiplication of the acquired content to the amount of the quality of mixture used, the amount used is computed for every component, and it is registered into the amount field of increase and decrease where a history table corresponds (Step S153).

[0110] (Bills-of-quantities output) The procedure of the total processing for a bills-of-quantities output is shown in drawing 24 . This procedure is completely the same as the 1st operation form.

[0111] That is, the time and spatial amount used about the pure substance for a total (the case of the quality of mixture the component matter) is first acquired from the amount field of increase and decrease of a history table (Step S161). Subsequently, the value of the amount rate of management disposal about the corresponding pure substance (the case of the quality of mixture the component matter), the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, and the amount rate of chemical changes is acquired from a possession matter managed table or a history table (Step S162). This acquired amount used is classified into the following items.

[0112] "Amount-used" = "amount of management disposal" +"environmental discharge (atmosphere, water, soil)"+ "the amount of recycling" + "the amount of chemical changes"

every [therefore, / for a total] pure substance (the case of the quality of mixture the component matter) -- "amount-used" x"amount rate of management abandonment" = "the amount of management abandonment"

"Amount-used" x "the amount rate of atmospheric exhausts" = "the amount of atmospheric exhausts"

"Amount-used" x "a water quality discharge rate" = "a water quality discharge"
"Amount-used" x "a soil discharge rate" = "a soil discharge"
"Amount-used" x "the amount rate of recycling" = "the amount of recycling"
"Amount-used" x "the amount rate of chemical changes" = "the amount of chemical changes"
"Amount-used" x "the amount rate of taking out" = "the amount of taking out"
By performing calculation to say, the value of "the amount of management disposal", the "amount of atmospheric exhausts", a "water quality discharge", a "soil discharge", the "amount of recycling" and the "amount of taking out" which should be outputted to bills of quantities, and the "amount of chemical changes" is computed (Step S163).

[0113] The structure for the safety management using the [3rd operation form], next the above-mentioned Fire Service Law coefficient is made to explain as the 3rd operation form. In addition, the basic composition of the chemical managerial system of a **** 3 operation form is the same as the 1st operation form.

[0114] First, the basic principle of safety management is explained.

[0115] With this operation form, the amount of possession to the amount of the maximum possession (upper limit in which possession is accepted) specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, boils the safe index showing the degree of safety comparatively, and, therefore, it is modeled. That is, the amount of the maximum possession (the Fire Service Law maximum possession KG) specified with the held regulation which has regulated the amount of possession and the handling of the chemical for every chemical is managed using the above-mentioned possession matter managed table, the amount of possession of the regulation matter to the amount of the maximum possession specified legally computes comparatively (Fire Service Law coefficient), and the calculation result is outputted as a safe index. In this case, the sum total of the Fire Service Law coefficient of each matter serves as a safe index of a storage warehouse. Hereafter, the suitable example for realizing this structure is explained.

[0116] (Regulation classification code master table) The example of the regulation classification code master table for managing a regulation classification is shown in drawing 25 . In the regulation classification code master table, one record is assigned for every regulation classification, and the field at a <regulation classification code>, a <regulation classification name>, the <Fire Service Law management partition>, the <Fire Service Law maximum possession KG>, the <Fire Service Law maximum possession l>, <registration time>, and the <time of a refix date> is defined as each record. There are kg and l (liter) in the unit of the amount of the maximum possession defined by Fire

Service Law. The unit of the amount of the maximum possession of the matter specified by the fourth kind of Fire Service Law is specific gravity (although it is a dimensionless as physical quantity) in the field of the Fire Service Law maximum possession KG of the above-mentioned possession matter managed table [matter / which is specified by the fourth kind of Fire Service Law since it is l (liter)]. The value converted by carrying out the multiplication of the amount of the maximum possession (l) to :kg/l defined as follows for convenience is registered.

[0117] On this regulation classification code master table, the Fire Service Law maximum possession KG and the Fire Service Law maximum possession l (liter) are managed for each [which regulates a chemical] regulation of every. Although there is a law about processing and cleaning of labor security and hygiene law, Fire Service Law, and waste etc. as a kind of regulation, it is only Fire Service Law that there is a convention of the amount of the maximum possession.

[0118] (Fire Service Law list) Next, the Fire Service Law list display screen for displaying the Fire Service Law coefficient for every matter is explained. If the Fire Service Law list tab is chosen on the operation screen of drawing 26 offered with the user managed software 12, a list indication of the matter code, a matter name, the amount of possession, a unit, the Fire Service Law coefficient, and the corresponding regulation name will be given about each chemical held like illustration by the storage warehouse chosen as a candidate for reference.

[0119] Here, the Fire Service Law coefficient is the value which broke the amount of possession of the chemical by the amount of the maximum possession specified by Fire Service Law which regulates the chemical as mentioned above. For example, when 0.01192kg of ethanol is held, the Fire Service Law coefficient is set to 0.00004. The Fire Service Law coefficient means that the matter is in a comparatively safe state about less than one matter.

[0120] What totaled the Fire Service Law coefficient of each [these] matter is displayed on the "Fire Service Law coefficient sum total" field under a screen. The value of the "Fire Service Law coefficient sum total" field is used as a safe index of the storage warehouse chosen as a candidate for reference, and if it is less than ["Fire Service Law coefficient sum total" =1], the storage warehouse means a comparatively safe thing. It is necessary to perform management according to Fire Service Law about the storage warehouse which becomes more than "Fire Service Law coefficient sum total" =1.

[0121] (The Fire Service Law coefficient calculation processing) The procedure for computing the Fire Service Law coefficient is shown in the flow chart of

drawing 27 . First, the amount of possession and the value of the Fire Service Law maximum possession KG are acquired from a possession matter managed table for each [which is held by the storage warehouse for investigation specified on the screen of the Fire Service Law list tab] chemical of every (Step S171). Subsequently, the Fire Service Law coefficient is called for for every matter by carrying out the division of the amount of possession by the Fire Service Law maximum possession KG (Step S172). And by accumulating the Fire Service Law coefficient for every matter, the total value of the Fire Service Law coefficient of each chemical held by the storage warehouse for investigation is computed, and it is displayed as the "Fire Service Law coefficient sum total" (Step S173).

[0122] In addition, since the Fire Service Law coefficient of each matter is beforehand called for by processing of Steps S171 and S173 when the Fire Service Law coefficient field is established in the possession matter managed table, as mentioned above, it becomes only processing of Step S173 to carry out, when the Fire Service Law list tab is chosen. Moreover, since the value of the Fire Service Law maximum possession KG is managed on the regulation classification code master table, you may make it acquire the value of the Fire Service Law maximum possession KG from a regulation classification code master table from a possession matter managed table.

[0123] The structure for the [4th operation gestalt], next the environmental load management using the above-mentioned weighting value is made to explain as the 4th operation gestalt. In addition, the basic composition of the chemical managerial system of a **** 4 operation gestalt is the same as the 1st operation gestalt.

[0124] First, the basic principle of an environmental load management is explained.

[0125] With this operation gestalt, the environmental load index (the degree of EI) which shows the degree of influence to the environment of each chemical is modeled using the amount of possession of a chemical, and the weighting factor corresponding to the chemical. The value of the weighting factor becomes large like a chemical with large influence of as opposed to environment in the value of a weighting factor. Thus, it becomes possible only by modeling using the weighting factor performing easy calculation of accumulating the product of the amount of possession, and a weighting factor for every matter to grasp an environmental load exactly. Hereafter, the suitable example for realizing this structure is explained.

[0126] (Matter code table) As shown in drawing 28 , corresponding to the matter

code, the weighting value (weighting factor) corresponding to the matter is defined as the matter code table which manages the peculiar matter code given to each possession matter. The value of a weighting factor is a peculiar value specified by this system, and the value of the weighting factor becomes large like the large chemical of the influence to environment as mentioned above. The environmental load index (the degree of EI) which shows the degree of influence to the environment of each matter is a value which multiplies the value (toluene : 10000, hydrogen-peroxide:10 grade) of the weighting factor decided for every matter by the amount of possession of the matter, and is calculated.

[0127] (Calculation processing of the degree of EI) The procedure which computes the degree of EI is shown in the flow chart of drawing 29 .

[0128] First, the weighting value of each chemical held by the storage warehouse for investigation is acquired from a matter code table or a possession matter managed table (Step S181). And the amount of possession of each chemical is acquired from a possession matter managed table, and the degree of influence (environmental load index) is computed by the amount of possession and weighting value for every chemical (Step S182). The degree of influence of each chemical is called for by the multiplication of the amount of weighting value x possession. Then, the total value of the degree of influence of each chemical is computed as a degree of EI of the storage warehouse for investigation by accumulating the degree of influence of each chemical (Step S183).

[0129] In addition, you may compute the degree of EI in the group unit by making into one group not only 1 storage warehouse unit but two or more storage warehouses which adjoin, for example and are installed.

[0130] (Display of the degree of EI) If a possession matter list tab is chosen on the operation screen of drawing 30 offered with the user managed software 12, a list indication of the chemical held in the storage warehouse for reference will be given like illustration. The field of "the degree of influence" is prepared on this screen, and the total value of EI of the degree of influence of each chemical computed on the basis of the present amount of chemical possession, i.e., the degree of the storage warehouse for reference, is displayed here. The foreground color of the field of "the degree of influence" changes with the degrees of influence to less than [9000]:green, less than [more than 9000 10000]:yellow, and more than 10000:red. Thus, by a storage warehouse unit estimating the degree of influence to environment, and enabling it to show it numerically, for example, the degree of influence searches 10000 or more storage warehouses, and the employment of it of performing instruction based on environmental preservation international standards, such as ISO 14001, is attained to the

manager of the storage warehouse.
[0131] Other functions prepared in the system of function] besides [, next each above-mentioned operation forms 1-4, respectively are explained.
[0132] (Term function manager of a container) This function is a function in which it is used in order to inspect the safety of the container periodically to the chemical held and managed in container units, such as a chemical cylinder. Like a chemical cylinder, about a container to be inspected periodical (maintenance), as shown in drawing 31 , the storage warehouse name by which it is kept, the container information for a maintenance which shows the kind of container, the maintenance cycle information which shows in how many months it should maintain with 1 time of a period, the information which shows the last maintenance execution time are managed.
[0133] Drawing 32 is the procedure of container term management.
[0134] The maintenance is performing term management of a required container for every storage warehouse using the table of drawing 31 (Step S191), and a system will notify a storage warehouse manager etc. of the storage warehouse which should maintain a container, and its container kind, if the container with which the value which subtracted the last maintenance time from the present time becomes a maintenance cycle is detected (Step S192) (Step S193). In addition, you may make it output a list of the container which corresponds several days before the time which should next maintain to paper etc.
[0135] (Output table conversion function) Generally the chemical codes used for every administration, such as a country, a prefecture, and a city, differ in many cases. Moreover, the chemical code which these administration uses differs also from the chemical code used by this system. An output table conversion function is a function for changing mutually a coding scheme which is mutually different in this way, and performing chemical management and report generation using the specified coding scheme. In order to realize this function, in this system, a matter code correspondence table as shown in drawing 33 is used. This matter code correspondence table holds the correspondence relation between the matter code used by this system, and the matter code used by administration, such as a country, a prefecture, and a city, for every matter. The procedure of output table transform processing using this matter code correspondence table is shown in drawing 34 .
[0136] First, the specification code corresponding to the administration in which a report should be submitted is inputted (Step S201). And the matter code (matter code of this chemical managerial system) of each chemical managed on the possession matter managed table, the history table, etc. is changed into the coding

scheme corresponding to the administration specified in specification code using a matter code correspondence table (Step S202). And various total processings are performed using the changed matter code, and creation of the report using the coding scheme specified in specification code is performed (Step S203).

[0137] (Automatic conversion of a unit) As warehousing processing of drawing 3 already explained, this function is a function for changing the units (ml, l, g, kg, Nm3, etc.) of the amount of warehousing mutually, and no matter an input may be performed in what unit, it can convert it into other units and amounts required for management. The procedure of automatic conversion of this unit is shown in drawing 35 .

[0138] first, the conversion to other units are performed using the unit and amount which were inputted, specific gravity (the case of gas -- a pressure etc.), etc. (Step S211) And the unit and amount which were inputted, and a reduced property (a unit and amount) are registered into a possession matter managed table etc. (Step S212). Thus, by managing the both sides of the unit and amount which were inputted, and a reduced property on a possession matter managed table, it becomes possible to correspond to various total form flexibly.

[0139] (Storage warehouse security function) By using the possession matter list tab of drawing 30 , the user of each part place can search the possession matter of all storage warehouses, and can know what matter is held about the storage warehouse of not only one's part but all other parts. However, when reference free even about the storage warehouse where dangerous matter, such as a toxic material, is held, for example is allowed, there is risk of having said that the matter was used being carried out unjustly. Then, in this chemical managerial system, the storage warehouse security function to prevent from referring to the contents of the possession matter from other parts is prepared about the specific storage warehouse.

[0140] The correspondence relation between the existence of possession of a toxic material and the flag which specifies whether the possession matter reference by the user is allowed is shown for every storage warehouse at drawing 36 . Here, since it usually passes and the reference from other parts is allowed by holding a toxic material about the storage warehouses A and B, since there is nothing, and the toxic material is held about the storage warehouse C, the state where the reference from other parts is forbidden is shown.

[0141] A setup of reference permission / prohibition of a storage warehouse unit is performed by the storage warehouse manager. [such] Hereafter, the interface for it is explained.

[0142] An example of the screen for storage warehouse management (storage

warehouse management tab) is shown in drawing 37 . This storage warehouse management tab is for defining storage warehouse information (a storage warehouse code, a storage warehouse name, storage warehouse manager) and its storage warehouse user information (User ID, a user name, etc. of a storage warehouse), and a storage warehouse manager can correct the contents. A click of the "storage warehouse information change" button of this storage warehouse management tab displays the storage warehouse information change dialog screen of drawing 38 . There is a meaning of each field of this storage warehouse information change dialog screen as follows.

[0143]

< storage warehouse name >: -- < manager name 1>: which inputs a storage warehouse name -- <tele>: which chooses the manager name of representation with a pull down menu -- the extension number of the manager of representation <TEL> which chooses a <manager name 2>:sub manager with a pull down menu: A sub manager's extension number.

[0144] Part public-presentation > besides <: Set up whether this storage warehouse is opened to the user of other parts by possession matter list. Only storage warehouses, such as a toxic material, perform this setup.

[0145] The user of a part besides "open" -- can also see the amount situation of possession.

[0146] Secret ["secret"] -- Only the user of a self-part can do a possession situation.

[0147] <Those who can be used>: Set up the range of the user of an applicable storage warehouse.

[0148] Only "storage warehouse user" -- Warehousing to a storage warehouse and use of a chemical are possible only for the user of an applicable storage warehouse.

[0149] The user of a part besides "all" system user -- can also use the chemical of an applicable storage warehouse.

[0150] <Storage warehouse classification>: Choose a storage warehouse or a recovery matter interim storage warehouse.

[0151] (Bar code input function) A bar code input function is a function which arrived and which gives a bar code for every matter, reads information required for matter management in the bar code automatically, and is registered into a database. Information, such as the above-mentioned environmental discharges rate, such as a matter name and an amount, besides the information for matter discernment, usage, a weighting value (or environmental load index), a kind of corresponding regulation, and the amount of the Fire Service Law maximum

possession (or Fire Service Law coefficient), can be included in this bar code. By this, the input by the help is mitigated, it becomes possible to register automatically the parameter for environmental discharge management, safety management, and an environmental load management into a table moreover, and the increase in efficiency of these managements can be attained.

[0152] In addition, although bar code equipment (bar code input unit) can also be installed per storage warehouse, it is formed in the transport devices (for example, truck etc.) for conveying a chemical in consideration of installation cost, and can be built from the bar code equipment formed in this transport device possible [a wireless input] to the chemical managerial system of this invention. Thus, if the whole system is built, installation of bar code equipment can be made into necessary minimum.

[0153] (Function manager of an un-intentional product) In PRTR, notice [product / un-intentional / which is represented by die OKIN etc.] may be submitted, and it may become the quality of an object.

[0154] The amount rate field of chemical changes which added the resin containing chlorine etc. as quality of a management object, and mentioned it above as management in that case is diverted to some other purpose and managed, or the un-intentional product field can newly be added, it can prepare, and the yield of an un-intentional product can be managed in accordance with the management technique of the above-mentioned operation form.

[0155] (Effect of each operation form) Although the operation form of this invention was divided into the operation forms 1-4 and was explained above, it will be understood that the chemical managerial system of this invention is built as a system having the function of these operation forms 1-4 in fact. Therefore, this chemical managerial system can manage and total the Fire Service Law coefficient etc. on many sides further whenever [environmental discharge / which is produced as a result of use of the possession matter / and EI / which is latent in the possession matter]. Since almost all parameters required for environmental discharge management, the degree management of EI, the Fire Service Law coefficient management, etc. were registered into the possession matter managed table etc. and are managed especially, a statistical value can be easily calculated from various viewpoints about the influence and the safety to natural environment.

[0156] This about the safe index which models it with the parameter decided by the matter kind and its use use, and expresses the degree of two safeties about 1 environmental discharge The amount of possession to the amount of the maximum possession specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, is comparatively alike, and, therefore, a

model is made. about 3 environmental load Technical thought in consideration of the feature of a property peculiar to a chemical and a database of making a model using the amount of possession of a chemical and the weighting factor corresponding to the chemical is realized for the first time.

[0157] Moreover, since two or more storage warehouses are usually set to each part place in many cases according to the kind exception of chemical etc., At first histories, such as warehousing, use, movement, and abandonment, by performing a storage warehouse as a unit like a **** operation form for environmental discharge management, the degree management of EI, and the Fire Service Law coefficient management more -- texture -- while warm matter management is attained, specification of a storage warehouse manager which should be guided can be performed easily Processing in which investigate the degree of safe per storage warehouse, or the degree of EI is investigated per storage warehouse by combining management in a storage unit, the degree management of EI, or the Fire Service Law coefficient management especially is attained.

[0158] In addition, since realizing with software has come out of the whole of each function of this chemical managerial system, a computer program including the procedure for the functional realization can be prepared, and the same effect as a **** operation form can be acquired only by introducing it into the usual computer through a record medium.

[0159]

[Effect of the Invention] as explained above, according to this invention, realizing the ideal chemical managerial system which can investigate the influence affect natural environment, and safety quickly and simply has come out

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[Translation done.]

* NOTICES *

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TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the management method and record medium of the chemical managerial system which has a function for managing the influence and the safety especially to natural environment, and the assimilation study matter about the management method and record medium of the chemical managerial system for managing chemicals, such as a chemical and gas, and the assimilation study matter.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] In recent years, the safety control about various chemicals, such as a chemical and gas, is improved by the social rise to global environment problems. Then, also in Japan, the legislation work of nature discharge of environmental pollutant / move registration system (PRTR:Pollutant Releaseand Transfer Register) is done. PRTR is the system where a company investigates itself the chemical currently used in the place of business etc., and an administrative body releases it. The amount of the chemical discharged to natural environment, such as the atmosphere and a river, the amount which moves out of a place of business as waste serve as a candidate for an official announcement.
[0003] However, in the present condition, the simple thing of the system for the chemical management used in the company having many which made stock control the key objective, for example, performing inventory investigation of the quality of a regulation object for every part situation within a station in paper, and inputting those data into a computer after collection by the help is almost the case. Moreover, since a chemical usually purchases in many cases by the chemical name etc., the management unit is also a chemical name unit, and it is not carried out in many cases by management in the component matter unit about mixture. For this reason, it is difficult to investigate correctly the amount of the chemical discharged to natural environment in the present system in practice.
[0004] Moreover, in the present condition, since there was no structure for a company investigating statistically the safety of the chemical held in the place of business etc., the environmental load by the possession chemical, etc., only the safety control based on the ambiguous index by experience of a manager etc. was able to be performed.

[Translation done.]

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EFFECT OF THE INVENTION

(Effect of each operation gestalt) Although the operation gestalt of this invention was divided into the operation gestalten 1-4 and was explained above, it will be understood that the chemical managerial system of this invention is built as a system having the function of these operation gestalten 1-4 in fact. Therefore, this chemical managerial system can manage and total the Fire Service Law coefficient etc. on many sides further whenever [environmental discharge / which is produced as a result of use of the possession matter / and EI / which is latent in the possession matter]. Since almost all parameters required for environmental discharge management, the degree management of EI, the Fire Service Law coefficient management, etc. were registered into the possession matter managed table etc. and are managed especially, a statistical value can be easily calculated from various viewpoints about the influence and the safety to natural environment.

[0156] About the safe index which this models it with the parameter decided by the matter kind and its use use about 1 environmental discharge, and expresses the degree of two safeties The amount of possession to the amount of the maximum possession specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, is comparatively alike, therefore a model is made, and technical thought in consideration of the feature of a property peculiar to a chemical and a database of making a model about 3 environmental load using the amount of possession of a chemical and the weighting factor corresponding to the chemical is realized for the first time.

[0157] Moreover, since two or more storage warehouses are usually set to each part place in many cases according to the kind exception of chemical etc., performing [histories, such as warehousing, use, movement, and abandonment,] a storage warehouse for environmental discharge management, the degree management of EI, and the Fire Service Law coefficient management as a unit at

first like a **** operation gestalt -- more -- texture -- while warm matter management is attained, specification of a storage warehouse manager which should be guided can be performed easily Processing in which investigate the degree of safe per storage warehouse, or the degree of EI is investigated per storage warehouse by combining management in a storage unit, the degree management of EI, or the Fire Service Law coefficient management especially is attained.

[0158] In addition, since realizing with software has come out of the whole of each function of this chemical managerial system, a computer program including the procedure for the functional realization can be prepared, and the same effect as a **** operation gestalt can be acquired only by introducing it into the usual computer through a record medium.

[Translation done.]

* NOTICES *

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] As mentioned above, it was difficult to manage correctly the amount of the chemical which the function for computing statistically influence, safety, etc. which are exerted on natural environment in the conventional system is not prepared, but is discharged to natural environment, an environmental load, safety, etc. In research facilities which treat the chemical of small quantity many forms especially, such as a lab of a company, and a university, it becomes huge [the amount of the data for management], and many efforts are needed for the management.
[0005] this invention is made in view of such a point, and it aims at offering the management method and record medium of the ideal chemical managerial system which can investigate the influence affect natural environment, and safety quickly and simply, and the assimilation study matter.

[Translation done.]

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MEANS

[Means for Solving the Problem] In the chemical managerial system with which this invention manages [abandonment / warehousing of a chemical, use, movement,] either at least using the database of a computer in order to solve an above-mentioned technical problem The matter management tool which manages the held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical, It is characterized by providing a total processing means to total an environmental discharge, based on a means to manage the amount used for every aforementioned chemical, and the amount used and the environmental discharge rate of a chemical for every aforementioned chemical.

[0007] The environmental discharge rate (for example, environmental discharge rate to the atmosphere, water, soil, etc.) for every chemical perceived the conditions beforehand determined according to predetermined conditions, for example, the point determined by the matter kind and its use use, and this invention has modeled and managed the environmental discharge rate with the parameter decided by the matter kind and its use use. Thus, if the environmental discharge rate to the atmosphere determined by the matter kind and its use use, water, soil, etc. is managed for every matter, the rest can only perform easy total processing in which the multiplication of these environmental discharge rate is carried out to the amount of each matter used, and can calculate the environmental discharge to the atmosphere, water, soil, etc. easily.

[0008] Moreover, the matter managed table on which a chemical kind, a use use, and the field for managing any one environmental discharge rate of the atmosphere, water, and the soil at least were defined as the database, When the atmosphere, the water, and the use table showing any one environmental discharge rate of the soil of each chemical are prepared and a chemical kind and a use use are inputted into the aforementioned matter managed table at least for

every use use, The thing which search the aforementioned use table and corresponds to the chemical kind and use use by which the input was carried out [aforementioned] and which is constituted so that any one environmental discharge rate of the atmosphere, water, and the soil may be acquired at least and the acquired environmental discharge rate may be registered into the aforementioned matter managed table is desirable.

[0009] Thereby, since automation of the input of the environmental discharge rate to a matter managed table can be attained, it becomes possible to arrange the required parameter on a matter managed table only by inputting a matter kind and a use use. Therefore, also in the research facilities which treat the chemical of small quantity many forms for various uses, total processing for an input and environmental discharge calculation can be performed efficiently.

[0010] a basis -- a **** environmental discharge rate may be determined as a default on a database at the time of data registration, and you may enable it to correct it according to various situations at the time of a data input at any time

[0011] Moreover, this invention is set using the database of a computer to chemical managerial systems which manage either at least, such as warehousing of a chemical, use, movement, and abandonment. A means to manage the amount of warehousing of a chemical, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment, respectively, The held environmental discharge rate which is beforehand determined according to predetermined conditions for every chemical, It is characterized by providing a total processing means to total an environmental discharge, based on the remainder which subtracted the aforementioned amount of intact possession, the aforementioned amount of intact abandonment, and the aforementioned amount of used recovery abandonment from the aforementioned amount of warehousing, respectively.

[0012] At the works where the use use of a chemical was defined beforehand, the environmental discharge rate to the atmosphere, water, soil, etc. can be beforehand determined for every chemical. For this reason, the amount in which the rest subtracted them from the amount of warehousing by managing neither the use nor an environmental discharge rate on a table for every chemical when only things to which an amount is clearly manageable, such as the amount of warehousing, the amount of intact possession, the amount of intact abandonment, and the amount of used recovery abandonment, managed can be calculated, and an environmental discharge can be totaled by carrying out the multiplication of the environmental discharge rate to the atmosphere, water, soil, etc. to it

[0013] In this case, it is desirable to establish further a means to compute the actual amount of abandonment excluding the impurity from the aforementioned

amount of used recovery abandonment, using the impurity coefficient which is determined as a total processing means by the matter kind and its use use of the aforementioned chemical and which is contained in the waste of the chemical, and to use this computed actual amount of abandonment for the total of the aforementioned environmental discharge. Thus, a more exact environmental discharge can be calculated by calculating an environmental discharge in consideration of existence of the impurity contained in the waste of a chemical.

[0014] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. When the information about the quality of mixture is inputted to the matter managed table for managing the component matter and the content of the component matter, and the aforementioned matter managed table for every held chemical, The component information by which the component matter and content are defined for every quality of mixture is searched. A means to register into the aforementioned matter managed table the component matter and content corresponding to the quality of mixture by which the input was carried out [aforementioned] is provided, and it is characterized by being constituted so that a possession chemical can be managed per pure substance.

[0015] Thus, it becomes possible by carrying out automatic registration of the component matter and content to a matter managed table about the quality of mixture to be able to perform now management in a pure-substance unit easily, and to perform the total of an environmental discharge etc. per pure substance.

[0016] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. A means to manage the amount of the maximum possession specified with the held regulation which has regulated the amount of possession, and the handling of the chemical for every chemical, The rate of the amount of possession of the regulation matter to the amount of the maximum possession specified with the aforementioned regulation is computed, and it is characterized by providing a safe index calculation means to output the calculation result as a safe index.

[0017] In this invention, the amount of possession to the amount of the maximum possession specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, boils the safe index showing the degree of safety comparatively, therefore it is modeled, and it enables this to ask for the safe index of the storage warehouse for keeping a chemical etc. statistically by calculation.

[0018] Since the values of the amount of the maximum possession specified legally generally differ for every chemical, moreover, a safe index calculation

means A means to compute the rate of the amount of possession to the amount of the maximum possession specified with the regulation which is kept in the storage warehouse set as the investigation object of a safe index, and which has regulated the handling of the chemical for every chemical as a safe index of the matter, It is desirable to realize by means to accumulate the safe index corresponding to each chemical managed in the storage warehouse for [aforementioned] investigation, and to output the accumulation result as a safe index of the storage warehouse for [aforementioned] investigation. Thereby, even when the matter of many forms is held by the storage warehouse, it becomes possible to grasp the degree of safe of the storage warehouse exactly.

[0019] Moreover, this invention is set to the chemical managerial system which manages warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer. A means hold to manage the amount of possession or amount used at least for every chemical, The weighting factor beforehand decided according to the degree of the influence to the environment which the chemical does for every chemical, The degree of influence to the environment of each aforementioned possession chemical which the aforementioned possession chemical does based on the amount of possession or the amount used at least is computed, and it is characterized by providing an environmental load index calculation means to output the calculation result as an environmental load index of the aforementioned possession chemical.

[0020] In this invention, the environmental load index of each chemical is modeled using the amount of possession or the amount used, and the weighting factor corresponding to the chemical of a chemical at least, and the value of the weighting factor becomes large like the large chemical of the influence to environment. Thus, it becomes possible only by modeling using the weighting factor performing easy calculation of accumulating the product of the amount of possession or the amount used, and a weighting factor for every matter at least to grasp an environmental load exactly.

[0021]

[Embodiments of the Invention] Hereafter, the operation form of this invention is explained with reference to a drawing.

[0022] [The 1st operation form]

(System configuration) The composition of the chemical managerial system concerning the 1st operation form of this invention is shown in drawing 1 . This chemical managerial system is for managing warehousing of a chemical, use, movement, abandonment, etc. using the database of a computer, and is built based on the relational database system of a client / server model. The application program 11 for pin center,large management (pin center,large managed software)

which the manager of the pin center,large which is an agency having charge uses for this system, and the application 12 for user managements (software for user managements) which the chemical user of each part place uses realize. The client pewter by the side of the pin center,large where pin center,large managed software 11 is performed, and the client computer of each part place where software 12 for user managements is performed are connected through the network, and the data (chemical data) obtained from each part place are managed with the pin center,large managed software 11. That is, the chemical user himself performs the data input for managing the used chemical etc. with the software 12 for user managements, and history management of warehousing, use, abandonment, movement, etc., a total, creation of a report, etc. are performed in a pin center,large side based on these input data using the pin center,large managed software 11. In addition, a batch program may be made to perform a total by server computer separately. Moreover, the software 12 refernce of the contents of the database managed with the pin center,large managed software 11 can be carried out for user managements. Fundamentally, although software 12 for user managements is premised on use in the state where online connection was made to the computer network, the software 12 for user managements can also be used for it by the offline state by the function which carries out the cash advance of some contents of a database to the local storage of the computer of each part place, and the data synchronous function between the computer of each part place, and the server computer of a pin center,large.

[0023] The main function managers of the pin center,large managed software 11 are management (new registration, change, deletion) of management codes, such as - matter code and a storage warehouse code.

- It is creation of purchase history management / report data of the history management and the chemical of use of the chemical of the grasp and each user of the present amount of possession of a chemical, abandonment, and movement.

[0024] The main function managers of the software 12 for user managements are move management between the storage warehouses of the management and the chemical of the amount of - chemical used, and the amount of abandonment (chemical expenditure is included).

- Stocktaking management of Fire Service Law management / storage warehouse of the registration and each storage warehouse of the warehousing Management Department place managed matter to the storage warehouse of a purchase chemical (only storage warehouse manager)
- Recovery management of a recovery matter interim storage warehouse (only recovery matter interim storage warehouse manager)

It comes out.

[0025] Moreover, this chemical managerial system is purchase regulation (recognition of a superior is required) of - non-registered chemical by cooperation with the purchase request system 13 by which management management is carried out at a material-control part etc. for matter purchase.
- The purchase of a chemical and acquisition of acceptance information can be performed.
[0026] (Function) The functional composition of this chemical managerial system is notionally shown in drawing 2 .
[0027] (1) The warehousing processing for managing warehousing processing warehousing is database operation which is needed when keeping chemicals which obtained the purchase request to the arrangements request system 13, and were purchased, such as a chemical and gas, in the chemical storage warehouse of the corresponding part. It is notified to the software 12 for user managements by arrival-of-goods data from the arrangements request system 13 that the chemical by which the purchase request was carried out arrived. The screen (warehousing matter add interface) for inputting the information of the stocked chemical name, its amount of warehousing, a warehousing day, a warehousing person, etc. into a database with the software 12 for user managements is offered, and input process by the user is performed on the screen. The example of a screen of this warehousing matter add interface is shown in drawing 3 . The meaning of each field is as follows.
[0028]
<Request number>: The request number at the time of an arrangements request
A part with the storage warehouse to stock selection <storage warehouse>:warehousing The unit specified at the time of the amount <unit>:arrangements request ordered by the chemical name <order quantity>:arrangements request which carried out the arranged <arrangements day>:date <acceptance day>:date <warehousing matter name>:arrangements request which was accepted <a warehousing part> : the storage warehouse to carry out Selection <a manager>: The manager name of the storage warehouse of which selection was done <TEL>: The extension number of the manager of the selected storage warehouse
<Warehousing day>: The date which registered the matter into the storage warehouse (usually registered day)
<Fire Service Law coefficient>: Display the Fire Service Law coefficient of the selected storage warehouse. The Fire Service Law coefficient is a parameter which shows the rate over the amount of the maximum possession regulated by Fire Service Law of the selected storage warehouse, and the detail is mentioned

later.
[0029] < matter configuration >: -- when the matter needs to be managed by the capacity of the <container capacity>:container which chooses the gestalt of matter management of a solid-state, a liquid, gas, etc., the radio button here is chosen, and capacity is inputted
[0030] A <number> which chooses a capacity unit when managing by <unit>:container capacity: When managing by container capacity, input the number of a container. A <unit> which chooses the radio button here when a container capacity x number does not manage by the amount of warehousing, and the becoming <amount [of warehousing]>:container capacity, and inputs the amount of warehousing: It is the unit (ml, l, g, kg, Nm3) of the amount of warehousing.
<Specific gravity>: Specific gravity of the selected matter. it checks, when registering the matter by the <management unit>:individual use used in order to carry out unit conversion so that the unit currently displayed may be suited and clarifying the person in charge of the matter -- for example Although the amount of arrival of goods can also be inputted in the form of container capacity =500ml and number =3 when three ethanol is arrived by 500ml bottle Such a container capacity unit not the amount of warehousing = it can input in the form of 1.5l., or can also input in the form of amount =of warehousing1.35kg. The automatic conversion function of a unit is prepared in this system, and no matter it may be inputted in what unit, the unit quantity is automatically changed into other units using a specific gravity value etc. It cannot be based on the kind of inputted unit by this, for example, management by default unit quantity, such as kg and Nm3, can be performed.
[0031] (2) movement between storage warehouses -- ****** -- when movement of a chemical is performed between chemical storage warehouses, the screen (move matter add interface) for inputting information, such as a moved matter name, and movement magnitude, move time, a movement place storage warehouse name, into a database is offered with the software 12 for user managements, and input process by the user is performed on the screen The example of a screen of this move matter add interface is shown in drawing 4 . The meaning of each field is as follows.
[0032]
The <move day> which chooses the unit of <movement magnitude>:<unit>: <movement magnitude> : It registers with < warehousing storage warehouse >: <a warehousing part> which chooses a part with the <storage warehouse> which the <warehousing part name>:movement place which decides on the date which moved the matter with a spin button stocks. [which inputs the movement

magnitude of the matter] A <manager> who chooses the storage warehouse stocked from a certain storage warehouse: Manager name of the selected storage warehouse <TEL> : Extension number of the manager of the selected storage warehouse

When the chemical held in (3) use processing chemical storage warehouse which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a warehousing storage warehouse> is used, processing which inputs information, such as the actually used amount used, is performed using the screen (use matter add interface) offered with the software 12 for user managements. A use history remains by this processing. If the matter used from the possession matter list display screen is chosen, a screen display of the use matter add interface will be carried out, and the input of information, such as the amount used, will be performed on the screen. The example of a screen of a use matter add interface is shown in drawing 5 . The meaning of each field is as follows.

[0033] The <amount used>: Input the amount of the matter used.

[0034]

The unit of < unit >: <the amount used> The <use day> to choose : the matter <Recovery matter interim-storage warehouse management> which sets up the used date with a spin button: "Nothing" that chooses the existence of recovery matter interim storage warehouse management with a radio button -- "**" which does not perform recovery matter management -- When < use form >: <recovery matter management> which performs recovery matter management is "**", "Whole-quantity abandonment" which chooses the use form of the matter -- "Continuation use" immediately discarded to a specification recovery matter interim storage warehouse after use (interim storage) -- When < recovery matter interim storage warehouse >: <a use form> treated as matter during use is "whole-quantity abandonment", When < abandonment container >: <a use form> which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a recovery matter interim storage warehouse> which chooses the recovery matter interim storage warehouse to discard is "whole-quantity abandonment", In addition it inputs the comment of the container to discard, a recovery matter interim storage warehouse is one form of a storage warehouse, i.e., the storage warehouse only for tails.

[0035] (4) Although the chemical after recovery / disposal processing use has what is collected for recycling, and the thing which is moved to a recovery matter interim storage warehouse, and is discarded, processings (recovery processing, disposal processing), such as an input of the amount of recoveries and an input of the amount of disposal, are performed using the screen offered with the software

12 for user managements, respectively. In abandonment processing, if a tail is chosen from the list display screen of the matter during use, the screen of a tail add interface like drawing 6 will be displayed, and information, such as the amount of abandonment, will be inputted on the screen. The example of a screen of this tail add interface is shown in drawing 6 . The meaning of each field is as follows.

[0036]

A <use day> which chooses the unit of <amount [of abandonment]>:<unit>: <the amount of abandonment>: Set up the date which used the matter with a spin button (usually date on the day). [which inputs the amount of abandonment of the matter]

<Recovery matter interim-storage warehouse management>: "Nothing" that chooses the existence of recovery matter interim storage warehouse management with a radio button -- "**" which does not perform recovery matter management -- When < use form >: <recovery matter management> which performs recovery matter management is "**", "Whole-quantity abandonment" which chooses the use form of the matter -- "Continuation use" immediately discarded to a specification recovery matter interim storage warehouse after use (interim storage) -- When < recovery matter interim storage warehouse >: <a use form> treated as matter during use is "whole-quantity abandonment", When < abandonment container >: <a use form> which displays the sum total of the Fire Service Law coefficient of < Fire Service Law coefficient >: <a recovery matter interim storage warehouse> which chooses the recovery matter interim storage warehouse to discard is "whole-quantity abandonment", (5) total processing total processing in which the comment of the container to discard is inputted totals the information about the amount of disposal of a chemical, an environmental discharge, the amount of recycling, etc. using the data on a database, is processing for drawing up the report, and is performed by the pin center,large managed software 11. An environmental discharge shows the amount of chemicals discharged by use of a chemical to natural environment, and the discharge to the atmosphere, water, and each soil is calculated by total.

[0037] (Definition of the amount of managements) Next, with reference to drawing 7 , the definition of the amount of managements of the chemical in this chemical managerial system is explained.

[0038] - The amount which stocked the chemical by which the amount delivery of goods of warehousing was carried out in the chemical storage warehouse is shown.

[0039] - The amount of the chemical held in the possession quantification study

matter storage warehouse is shown.

[0040] - The amount which used the amount-used possession chemical is shown. This amount used is an amount taken out from the chemical container managed in the storage warehouse, and is equivalent to the sum of the amount of disposal, an environmental discharge, the amount of recycling, the amount of chemical changes, and the amount of taking out. An environmental discharge is an amount discarded to the atmosphere, water, soil, etc., as mentioned above, and the amount by which this amount is discharged in the use stage of a possession chemical is almost the case. When a product is manufactured by use of a possession chemical, the amount contained for the product itself is also contained.

[0041] - When a product is manufactured by use of the amount possession chemical of taking out, the amount which contains for the product itself and is taken out outside from a manufacture site is shown.

[0042] - The amount which discarded the abandonment quantification study matter in the recovery matter interim storage warehouse. The chemical of a recovery matter interim storage warehouse has what is collected as a waste solvent, the thing sent to a waste-water-treatment place, and the thing collected as an unnecessary chemical (waste chemical).

[0043] - There are the amount of move leaving the garage and the amount of move warehousing in movement magnitude movement magnitude. The amount of move leaving the garage shows the amount which left the moved material by movement between storage warehouses of a chemical, and the amount of move warehousing shows the amount stocked at the movement place by movement between storage warehouses of a chemical.

[0044] (Management classification) Drawing 8 is drawing showing the management classification of the chemical in this chemical managerial system.

[0045] Like illustration, a chemical is divided into the pin center,large managed matter and the part managed matter, and is managed.

[0046] - By the chemical registered in the pin center,large managed matter pin center,large, a pin center,large manages only this matter.

[0047] - Matter which manages the chemical by which pin center,large registration is not carried out by being original with a registration part, such as matter which refined the part managed matter pin center,large managed matter, mixed, and came to hand as a sample. This matter manages only at the registered part and is not managed in the pin center,large.

[0048] For example, when the intermediate product C by which pin center,large registration is not carried out as the mixture is generated by mixing Chemicals A and B, part management is performed about the intermediate product C, and it is

managed in the pin center,large about the chemicals A and B which are component matter of the intermediate product C.

[0049] (Management unit) Drawing 9 is drawing for explaining the management unit of the chemical in this chemical managerial system.

[0050] In this chemical managerial system, a peculiar matter code is assigned for every possession chemical, and a possession chemical is managed by the matter code unit. The example of the chemical for management is shown below.

[0051] 1) About various gas, such as 3 gas helium, such as chemical at large reagent 2 heavy chemicals, a chemistry material fluorescent substance, distilled water, a semiconductor chemical, an industrial use chemical, adhesives, adhesion liquid, dust cleanness, an etching chemical, other coal chemical products, and plating liquid, nitrogen, hydrogen, oxygen, an argon, semiconductor gas, acetylene, ammonia, and a nitrous oxide, a liquid object, and a possession chemical, management in a container capacity unit and a warehousing person unit is also performed.

[0052] - Container capacity unit management; manage in capacity of the container stocked in the storage warehouse.

[0053] - Warehousing person unit management : manage in the unit of container capacity with the warehousing person who stocked in the storage warehouse.

[0054] As mentioned above, the these-managed unit can choose either at the time of warehousing registration of a chemical, and can set it as it for every matter.

[0055] : (Environmental discharge management) The 1st example (example on the basis of the amount used)

Next, the structure for the environmental discharge management which is one of the important features of this operation form is explained.

[0056] First, the basic principle of the environmental discharge management on the basis of the amount of the chemical used is explained as the 1st example.

[0057] With this operation form, environmental discharge rates through which it passes, respectively, such as the environmental discharge rate for every chemical, for example, the atmosphere, water, and soil, have modeled and managed the environmental discharge rate with the parameter decided by the matter kind and its use use using the point of being determined by for example, a matter kind and its use use (beforehand determined by predetermined conditions). That is, the matter kind (parameter which shows the matter itself, such as a matter name and a matter code), a use use and the atmosphere, water, soil, etc. manage the environmental discharge rate through which it passes, respectively about each held chemical using a database.

[0058] Thus, if environmental discharge rates through which it passes, respectively, such as the atmosphere determined by the matter kind and its use

use, water, and soil, are managed, the rest can only perform easy total processing in which the multiplication of these environmental discharge rate is carried out to the amount of each chemical used, and can calculate easily environmental discharges through which it passes, respectively, such as the atmosphere, water, and soil. Hereafter, the suitable example for realizing this structure is explained.

[0059] (Possession matter managed table) The field composition of the possession matter managed table for managing the possession situation of the chemical in the storage warehouse of each part place is shown in drawing 10 . This possession matter managed table is the matter kind (parameter which shows the matter itself, such as a matter name and a matter code), and a use use (as a use use) about each held chemical. Besides pure uses, such as washing, also include conditions, such as temperature and a pressure, as an operating environment. and time (period) in environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, -- being spatial (a part unit, a storage warehouse unit, all a place, all storage warehouses, etc.) -- it is one of two or more of the tables which are used in order to manage, and constitute a relational database One record (one line) is assigned for each [which is held] chemical of every, and the field like illustration is defined as each record. Here, the explanation is given about some typical fields.

[0060] <Storage warehouse code>: The peculiar code of the storage warehouse which holds the corresponding chemical is shown. A storage warehouse code consists of the building number and room number which show the whereabouts of a storage warehouse, a storage warehouse number, etc. When two or more storage warehouses exist in one part by the this <storage warehouse code> field, it becomes possible to manage the influence to environment, safety, etc. in the storage warehouse unit.

[0061] The peculiar matter code assigned for <matter code>:each chemical of every <a sub number>: When the matter specified in the matter code of the component matter and <matter code> when the matter specified by code < component matter code >[for discriminating the chemical from which a matter name differs by the same matter species]: <a matter code> is mixture is a pure substance, the same code as a <matter code> is set up.

[0062] The code for discriminating the chemical from which a matter name or a tradename differs by the <component sub number>:same matter species <a part management flag> : [whether it is the pin center,large managed matter and] The flag for discriminating whether it is the part management managed matter <a matter name> : A matter name, The code which shows the regulation which makes applicable to regulation the matter with which it is specified by identifier < regulation classification code >: <a matter code> which discriminates its matter

name <matter attribute>:pure substance and compound / mixture / component matter in the case of the component matter <a storage warehouse management flag> : [whether it is individual management and] flag < warehousing person name >: which shows whether it is management in a storage warehouse unit -- name < warehousing time >: of the person who performed warehousing processing -- time < type >: which finally performed warehousing processing -- < which shows the attribute of a liquid, a solid-state, etc. -- the amounts of possession of use unit <amount of possession>:this time, such as use unit >:kg, ml, and the number, are shown This value is fluctuated by warehousing processing, use processing, etc.

[0063] The value which changed the amount of <amount [of possession] KG>:possession into kg, the value which changed into Nm3 in the case of gas <a content>: The content (content) of the component matter is shown. The <amount rate of management abandonment> which shows the amount of the maximum possession which is the value set up to the quality of a management object of <Fire Service Law maximum possession KG>:Fire Service Law used in case the amount of possession of the component matter is calculated, and can hold the matter safely in a specific zone : As opposed to the amount used The rate put in and managed after use in a recovery matter interim storage warehouse <an environmental discharge rate (atmosphere)> : As opposed to the amount used The rate discharged by the atmosphere by use <an environmental discharge rate(water)> : As opposed to the amount used The rate discharged by water quality by use <an environmental discharge rate (soil)> : As opposed to the amount used A rate reusable as recycling matter after the rate <amount rate of recycling>:use which changes chemically at the time of the rate <amount rate of chemical changes>:use discharged by soil, and changes with use to other matter <the amount of taking out> : when a product is manufactured by use of a possession chemical The code which shows the use use of the matter specified by amount <the way code to be used>: <a matter code> which contains for the product itself and is taken out outside from a manufacture site <the Fire Service Law coefficient>: The rate of the amount of matter possession to the amount of the maximum possession regulated by Fire Service Law is shown. By accumulating this rate for every matter per storage warehouse, the Fire Service Law coefficient as a storage warehouse can be shown.

[0064] <Weighting value>: The environmental load index which shows the degree of the degree of influence to the environment of the corresponding matter. By accumulating the product of an environmental load index and the amount of possession for every matter per storage warehouse, an environmental load can be investigated per storage warehouse.

[0065] In this possession matter managed table, when a matter name is inputted, the matter code assigned beforehand is set automatically by the possession matter managed table. And when usage is inputted, the way table which is mentioned later and to be used is searched, the value of the environmental discharge rate to the atmosphere and water which are determined depending on the matter code and usage, and each soil, and the amount rate of chemical changes and the amount rate of recycling is acquired, and they are set automatically by the field where a possession matter managed table corresponds, respectively.
[0066] Moreover, about the method of use of the Fire Service Law coefficient and a weighting value, it mentions later.
[0067] (History table) The field composition of the history table for managing histories, such as the use and abandonment to the chemical held in each part place, and movement, is shown in drawing 11 . this history table is time in the amount used, the amount of abandonment, movement magnitude, etc. for every possession chemical (period) -- being spatial (a part unit, a storage warehouse unit, all a place, all storage warehouses, etc.) -- it is one of two or more of the tables which are used in order to manage, and constitute a relational database One record (one line) is assigned for each [which is held] chemical of every, and the field like illustration is defined as each record. Here, the explanation is given about some typical fields. In addition, the meaning of the field of the same name as a possession matter managed table is the same as it of a possession matter managed table.
[0068] < history classification >: -- the amount of increase and decrease of the amount of possession held in the <amount of increase and decrease>:storage warehouse used for discernment of processings, such as warehousing, movement, use, abandonment, and recovery, is shown When <history classification> shows "reduction by use", the value of <the amount of increase and decrease> turns into a value (minus) equivalent to the amount used, and the value of <the amount of increase and decrease> will show the amount used.
[0069] (Way table to be used) An example of the composition of a how [to use the above-mentioned] table is shown in drawing 12 . This way table to be used is a table which defined the environmental discharge rate to the atmosphere of each chemical, water, and each soil, and the amount rate of recycling and the amount rate of chemical changes for every use use, and consists of two or more tables divided according to usage. Each usage table is associated in way code which is set as the how [to use the above-mentioned matter managed table] field and to be used. In each usage table, one record (one line) is assigned for every held chemical, and the field of a <matter code>, the <amount rate of management

disposal>, the <amount rate of atmospheric exhausts>, a <water quality discharge rate>, a <soil discharge rate>, the <amount rate of recycling>, the <amount rate of chemical changes>, and the <amount rate of taking out> is defined as each record like illustration.

[0070] As mentioned above, the value of <the amount rate of atmospheric exhausts>, a <water quality discharge rate>, a <soil discharge rate>, the <amount rate of recycling>, the <amount rate of chemical changes>, and the <amount rate of taking out> can be beforehand decided by relation between a chemical and its usage. That is, what is necessary is just to register it into the way table which uses the forecast, since the coefficient value at what rate it is discharged by the atmosphere, water, and each soil at what rate, and a chemical change, the amount of taking out, and the amount of recycling arise can be beforehand expected depending on the property of the matter, and usage. Moreover, you may make it determine the value registered into the way table to be used, and which is used using the statistical data of the measured value by surveying the environmental discharge to the atmosphere about each of each matter, water, and each soil for every way about the environmental discharge rate to the atmosphere, water, and each soil.

[0071] The way code which uses the chemical of matter code =01 by illustrating the way table which corresponds to way code =01 to be used in drawing 12 , and to be used = when it is used for the use shown by 01, the example used as amount rate =of amount rate =of amount rate =of amount rate =of atmospheric exhausts 0.1 water-quality discharge rate =0 soil discharge rate =0 recycling 0 chemical changes 0 taking out 0 is shown.

[0072] Since the remainder which lengthened the total value of these rates from 1 serves as the amount rate of management abandonment discarded by the recovery matter interim storage warehouse, it is set to amount rate =of management abandonment 0.9.

[0073] Moreover, the way code which uses the chemical of matter code =02 = when it is used for the use shown by 01, the example used as amount rate =of amount rate =of amount rate =of amount rate =of atmospheric exhausts 0.2 water-quality discharge rate =0.1 soil discharge rate =0 recycling 0 chemical changes 0.2 taking out 0 is shown. In this case, the amount rate of management abandonment = it is set to 0.5.

[0074] (Bills of quantities) An example of the bills of quantities obtained by total processing is shown in drawing 13 . These bills of quantities are used as a report for indicating an environmental discharge etc. to an administrative body etc., and are calculated using an above-mentioned possession matter managed table and an

above-mentioned history table. Values, such as an inventory, the amount used, the amount of management disposal, movement magnitude, the amount of recycling, the amount of atmospheric exhausts, a water quality discharge, a soil discharge, the amount of chemical changes, and the amount of taking out, are included in bills of quantities for every possession chemical like illustration an inventory, the amount of warehousing, and this term the matter code, a matter name, a unit, and the first half.

[0075] (Acquisition of an environmental discharge rate) The procedure which acquires an environmental discharge rate from a use table automatically, and is registered into a possession matter managed table is shown in drawing 14 .

[0076] First, a matter code and the way code to be used are inputted into a possession matter managed table (Step S101). In this case, the work done by the help is the work which chooses a matter name from a matter name list menu, and work which chooses how to use from the way list menu to be used. The input of the matter code which corresponds automatically is performed by choosing a matter name.

[0077] Subsequently, reference of the way table which uses a matter code and the way code to be used as a key and to be used is performed, and the value of the amount rate of management disposal, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of chemical changes, and the amount rate of taking out is acquired from the record applicable to a matter code key in the way table corresponding to the way code key to be used to be used (

[0078] Then, automatic registration of the value of the acquired amount rate of management disposal, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of chemical changes, and the amount rate of taking out is carried out to the field position where a possession matter managed table corresponds (Step S103).

[0079] (Bills-of-quantities output) The procedure of the total processing for a bills-of-quantities output is shown in drawing 15 .

[0080] First, the time and spatial amount used about the chemical for a total is acquired from the amount field of increase and decrease of a history table (Step S111). Subsequently, the value of the management displacement rate about the corresponding matter, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, the amount rate of taking out, and the amount rate of chemical changes is acquired from a possession matter managed table or a history table (Step S112). This acquired amount used is classified into the following items.

[0081] "Amount-used" = "amount of management disposal" + "environmental discharge (atmosphere, water, soil)" +"amount of recycling"+ "the amount of chemical changes" + "the amount of taking out"
every [therefore,] chemical for a total -- "amount-used" x"amount rate of management abandonment" = "the amount of management abandonment"
"Amount-used" x "the amount rate of atmospheric exhausts" = "the amount of atmospheric exhausts"
"Amount-used" x "a water quality discharge rate" = "a water quality discharge"
"Amount-used" x "a soil discharge rate" = "a soil discharge"
"Amount-used" x "the amount rate of recycling" = "the amount of recycling"
"Amount-used" x "the amount rate of chemical changes" = "the amount of chemical changes"
"Amount-used" x "the amount rate of taking out" = "the amount of taking out"
By performing calculation to say, the value of "the amount of management disposal", the "amount of atmospheric exhausts", a "water quality discharge", a "soil discharge", the "amount of recycling" and the "amount of taking out" which should be outputted to bills of quantities, and the "amount of chemical changes" is computed (Step S113).
[0082] : (The 2nd example of environmental discharge management) The 2nd example of the management on the basis of the amount of abandonment, next environmental discharge management is explained.
[0083] Although the way and environmental discharge rate (the atmosphere, water, soil) to be used, the amount used, etc. were managed for every chemical in the above-mentioned example, this is a suitable management method for the research facilities which use the matter of small quantity many forms for various uses.
[0084] On the other hand, at the works where the use use of a chemical was defined beforehand, environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, the amount rate of chemical changes, the amount rate of recycling, and the amount rate of taking out can be beforehand determined uniquely for every chemical. For this reason, if the way or environmental discharge rate to be used are not separately managed on a table but are performed separately using the history managed table of the above-mentioned [** / management of the amount of warehousing, the amount of the amount of intact / used /, and intact abandonment, and the amount of used recovery abandonment] for every chemical The rest in the amount which subtracted the amount of the amount of intact [used], and intact abandonment, and the amount of used recovery abandonment from the amount of warehousing If an environmental discharge can be totaled by carrying out the multiplication of the

environmental discharge rates through which it passes, respectively, such as the atmosphere, water, and soil, and the multiplication of the amount rate of chemical changes, the amount rate of recycling, and the amount rate of taking out is carried out similarly, the amount of chemical changes, the amount of recycling, the amount of taking out, etc. can be totaled.

[0085] Since the impurity may be mixing by use processing, when the surveyed amount of abandonment is used as it is into the waste into which it was put in this case in the recovery matter interim storage warehouse, it may be able to stop however, being able to compute the right amount used. Therefore, it is desirable to compute the actual amount of abandonment excluding the impurity from the surveyed amount of abandonment using an impurity coefficient table as shown in drawing 16 .

[0086] The impurity coefficient table shown in drawing 16 corresponds to "usage" of specification with a chemical, and the value of an impurity coefficient, the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, and the amount rate of chemical changes is registered here for every matter code like illustration. (The measured amount of abandonment) The actual amount of abandonment can be calculated by x (1-impurity coefficient).

[0087] (The 2nd example of a bills-of-quantities output) The procedure of the total processing corresponding to the 2nd example of environmental discharge management is shown in drawing 17 .

[0088] First, processing which computes the actual amount of abandonment is performed using the impurity coefficient table of drawing 16 (Step S121). As mentioned above in this processing, it is x (the measured amount of abandonment) (1-impurity coefficient).

The actual amount G of abandonment is calculated by ******.

[0089] Subsequently, the actual amount of abandonment (G) totaled in time and spatially is subtracted from the amount of warehousing (the amount of warehousing) totaled in time and spatially, and the amount of atmospheric exhausts, a water quality discharge, a soil discharge, the amount of chemical changes, etc. are calculated by multiplying by values, such as the amount rate of atmospheric exhausts of the matter corresponding to the subtraction result, a water quality discharge rate, a soil discharge rate, and the amount rate of chemical changes, (Step S122).

[0090] In addition, it sets under a specific condition (the amount of warehousing). - (G)

** -- you may regard it as an environmental discharge fundamentally

[0091] As explained also in the 1st operation gestalt of the [2nd operation

gestalt], for management of an environmental discharge, matter management in a pure-substance unit is needed. Here, the concrete structure of the pure-substance management is made to explain as the 2nd operation gestalt. In addition, the basic composition of the chemical managerial system of a **** 2 operation gestalt is the same as the 1st operation gestalt. The (function), (a definition of the amount of managements) which were explained with the 1st operation gestalt (system configuration), (Management classification), a (management unit), (environmental discharge management), a (possession matter managed table), A (history table), (the way table to be used), (bills of quantities), (acquisition of an environmental discharge rate), a (bills-of-quantities output), the (2nd example of environmental discharge management), and the (2nd example of a bills-of-quantities output) are applied to the 2nd operation gestalt as it is.

[0092] (Possession matter managed table) Drawing 18 extracts and shows only the portion about pure-substance management in the possession matter managed table explained by drawing 10 of the 1st operation gestalt. The meaning of each field of drawing 18 is as the 1st operation gestalt having explained. About the pure substance, it is assignment of 1 matter 1 record, and the record is separately assigned about the quality of mixture (aqua regia) to the quality of mixture, and each component matter which constitutes it so that drawing 18 may show.

[0093] In drawing 18 , it is matter code =A1, sub number =00, component matter code =A1, component sub number =00, and content =1 about the ethyl alcohol which is a pure substance. Thus, in the case of a pure substance, a matter code and a component matter code become the same, and are set to content =1.

[0094] Although ethanol is the same matter as substantially as ethyl alcohol, it is matter with which names differ. Although a matter code is set to the A1 [same] as ethyl alcohol about this ethanol, a sub number serves as a different value 01 from ethyl alcohol. Moreover, a content is 1.

[0095] It is set to matter code =B1, sub number =00, component matter code =B1, and component sub number =00 about the aqua regia which is mixture. And the record of the nitric acid which is the component matter of an aqua regia, and a hydrochloric acid is arranged at the record under it.

[0096] About the nitric acid which is the component matter, a matter code is set to the B1 [same] as an aqua regia, and is set to sub number =00, component matter code =C1, component sub number =00, and content =0.25. Content = 0.25 means that the nitric acid is contained in an aqua regia at a rate of 0.25. The value of the content of the component matter is used in order to calculate the amount of possession of the component matter from the amount of possession of the quality of mixture.

[0097] "Amount of possession of component matter" ="amount of possession of quality of mixture" x "the content of the component matter"
About the hydrochloric acid which is the 2nd component matter, a matter code is set to the B1 [same] as an aqua regia, and is set to sub number =00, component matter code =D1, component sub number =00, and content =0.75.
[0098] Thus, it becomes possible by managing the component matter and content on a possession matter managed table about the quality of mixture to be able to perform now management in a pure-substance unit easily, and to perform the total of an environmental discharge etc. per pure substance. Management of this pure-substance unit is similarly performed not only about a possession matter managed table but about a history table.
[0099] Moreover, what is necessary is just to register an environmental discharge rate (the atmosphere, water, soil) for every component matter of the at a possession matter managed table in the case of the quality of mixture, since information, such as an environmental discharge rate (the atmosphere, water, soil), is registered into the how [to use the above-mentioned] table per pure substance.
[0100] In addition, although the field about the component matter was not prepared in the record for managing each chemical here but the information about the component matter and the information about the quality of mixture are altogether managed as one record like other pure substances, this is because an environmental discharge can be calculated easily while preventing generating of the useless field.
[0101] The relation between each quality of mixture, its component matter, and a content is beforehand defined as the database called a matter management database. All possession chemicals are defined by the "matter managed table" unitary. In addition, this table is the same structure as a possession matter managed table. Therefore, if even the quality name of mixture is inputted, the rest can take out the information on the component matter from a matter management database, and can register it automatically. An example of this procedure is shown in the flow chart of drawing 19 .
[0102] If the nature code of mixture or the quality name of mixture is inputted by the user on the screen for performing matter registration as shown in drawing 19 (Step S131), reference of the matter management database which uses the nature code of mixture or the quality name of mixture as a key will be performed, and information, such as component matter and a content, will be acquired from a matter management database (Step S132). And these information is registered into a possession matter managed table (Step S133).

[0103] In addition, it displays on the screen for matter registration of the above-mentioned [information, such as component matter acquired from the matter management database, and a content,], and you may enable it to operate selection of a component, addition, change, or change of a content if needed. Since the quality of mixture obtained by mixing at a self-part also exists in the quality of mixture, it is because it is also considered that it cannot respond for the default component information defined as the component database.

[0104] (Matter registration screen) An example of a matter registration screen (matter add interface) is shown in drawing 20 . The meaning of each field is as follows.

[0105] <Part managed matter name>: The name of the matter registered at a part. The already registered name cannot be registered.

[0106]

< chemical configuration >: -- the configuration of a chemical -- selection < container capacity >: -- the number of a container is inputted when managing by the <number>:container capacity which chooses the radio button here when the matter needs to be managed by the capacity of a container, and chooses a capacity unit when managing by the <unit>:container capacity which inputs capacity The <amount of warehousing> from which a container capacity x number serves as the amount of warehousing : When not managing by container capacity, the radio button here is chosen. The manager name of the storage warehouse of which selection <a manager>:selection was done in the storage warehouse which does selection <a warehousing storage warehouse>:warehousing of a part with the storage warehouse which the registration matter makes <unit>:unit <specific gravity>:specific-gravity <a warehousing part>:warehousing of the amount of warehousing which inputs the amount of warehousing <TEL>: The extension number of the manager of the selected storage warehouse

< Fire Service Law coefficient >: -- Fire Service Law coefficient < warehousing day >: of the selected storage warehouse -- date < component >: which registered the matter into the storage warehouse -- a list indication of the information on a component is given A double click of the part of component information to change displays a dialog screen for information change like drawing 21 (component information change form). Here, the content of the component in the matter to register, a unit, and specific gravity can be set up.

[0107] Moreover, if the "component addition" button of drawing 20 is clicked, a dialog screen for a component addition like drawing 22 (additional component add interface) is displayed, and additional registration of the component can be

carried out there.
[0108] (The amount-used calculation of the component matter) The procedure for computing the amount of the component matter used is shown in drawing 23 .
[0109] First, the amount of the quality of mixture used is acquired from the amount field of increase and decrease of a history table (Step S151). Subsequently, the content of each component matter of the quality of mixture is acquired from a possession matter managed table or a history table (Step S152). And by carrying out the multiplication of the acquired content to the amount of the quality of mixture used, the amount used is computed for every component, and it is registered into the amount field of increase and decrease where a history table corresponds (Step S153).
[0110] (Bills-of-quantities output) The procedure of the total processing for a bills-of-quantities output is shown in drawing 24 . This procedure is completely the same as the 1st operation gestalt.
[0111] That is, the time and spatial amount used about the pure substance for a total (the case of the quality of mixture the component matter) is first acquired from the amount field of increase and decrease of a history table (Step S161). Subsequently, the value of the amount rate of management disposal about the corresponding pure substance (the case of the quality of mixture the component matter), the amount rate of atmospheric exhausts, a water quality discharge rate, a soil discharge rate, the amount rate of recycling, and the amount rate of chemical changes is acquired from a possession matter managed table or a history table (Step S162). This acquired amount used is classified into the following items.
[0112] "Amount-used" = "amount of management disposal" +"environmental discharge (atmosphere, water, soil)"+ "the amount of recycling" + "the amount of chemical changes"
every [therefore, / for a total] pure substance (the case of the quality of mixture the component matter) -- "amount-used" x"amount rate of management abandonment" = "the amount of management abandonment"
"Amount-used" x "the amount rate of atmospheric exhausts" = "the amount of atmospheric exhausts"
"Amount-used" x "a water quality discharge rate" = "a water quality discharge"
"Amount-used" x "a soil discharge rate" = "a soil discharge"
"Amount-used" x "the amount rate of recycling" = "the amount of recycling"
"Amount-used" x "the amount rate of chemical changes" = "the amount of chemical changes"
"Amount-used" x "the amount rate of taking out" = "the amount of taking out"
By performing calculation to say, the value of "the amount of management

disposal", the "amount of atmospheric exhausts", a "water quality discharge", a "soil discharge", the "amount of recycling" and the "amount of taking out" which should be outputted to bills of quantities, and the "amount of chemical changes" is computed (Step S163).

[0113] The structure for the safety management using the [3rd operation gestalt], next the above-mentioned Fire Service Law coefficient is made to explain as the 3rd operation gestalt. In addition, the basic composition of the chemical managerial system of a **** 3 operation gestalt is the same as the 1st operation gestalt.

[0114] First, the basic principle of safety management is explained.

[0115] With this operation gestalt, the amount of possession to the amount of the maximum possession (upper limit in which possession is accepted) specified with regulations, such as Fire Service Law which has regulated the handling of a chemical, boils the safe index showing the degree of safety comparatively, and, therefore, it is modeled. That is, the amount of the maximum possession (the Fire Service Law maximum possession KG) specified with the held regulation which has regulated the amount of possession and the handling of the chemical for every chemical is managed using the above-mentioned possession matter managed table, the amount of possession of the regulation matter to the amount of the maximum possession specified legally computes comparatively (Fire Service Law coefficient), and the calculation result is outputted as a safe index. In this case, the sum total of the Fire Service Law coefficient of each matter serves as a safe index of a storage warehouse. Hereafter, the suitable example for realizing this structure is explained.

[0116] (Regulation classification code master table) The example of the regulation classification code master table for managing a regulation classification is shown in drawing 25 . In the regulation classification code master table, one record is assigned for every regulation classification, and the field at a <regulation classification code>, a <regulation classification name>, the <Fire Service Law management partition>, the <Fire Service Law maximum possession KG>, the <Fire Service Law maximum possession l>, <registration time>, and the <time of a refix date> is defined as each record. There are kg and l (liter) in the unit of the amount of the maximum possession defined by Fire Service Law. The unit of the amount of the maximum possession of the matter specified by the fourth kind of Fire Service Law is specific gravity (although it is a dimensionless as physical quantity) in the field of the Fire Service Law maximum possession KG of the above-mentioned possession matter managed table [matter / which is specified by the fourth kind of Fire Service Law since it is l (liter)]. The value converted by carrying out the multiplication of the amount

of the maximum possession (l) to :kg/l defined as follows for convenience is registered.

[0117] On this regulation classification code master table, the Fire Service Law maximum possession KG and the Fire Service Law maximum possession l (liter) are managed for each [which regulates a chemical] regulation of every. Although there is a law about processing and cleaning of labor security and hygiene law, Fire Service Law, and waste etc. as a kind of regulation, it is only Fire Service Law that there is a convention of the amount of the maximum possession.

[0118] (Fire Service Law list) Next, the Fire Service Law list display screen for displaying the Fire Service Law coefficient for every matter is explained. If the Fire Service Law list tab is chosen on the operation screen of drawing 26 offered with the user managed software 12, a list indication of the matter code, a matter name, the amount of possession, a unit, the Fire Service Law coefficient, and the corresponding regulation name will be given about each chemical held like illustration by the storage warehouse chosen as a candidate for reference.

[0119] Here, the Fire Service Law coefficient is the value which broke the amount of possession of the chemical by the amount of the maximum possession specified by Fire Service Law which regulates the chemical as mentioned above. For example, when 0.01192kg of ethanol is held, the Fire Service Law coefficient is set to 0.00004. The Fire Service Law coefficient means that the matter is in a comparatively safe state about less than one matter.

[0120] What totaled the Fire Service Law coefficient of each [these] matter is displayed on the "Fire Service Law coefficient sum total" field under a screen. The value of the "Fire Service Law coefficient sum total" field is used as a safe index of the storage warehouse chosen as a candidate for reference, and if it is less than ["Fire Service Law coefficient sum total" =1], the storage warehouse means a comparatively safe thing. It is necessary to perform management according to Fire Service Law about the storage warehouse which becomes more than "Fire Service Law coefficient sum total" =1.

[0121] (The Fire Service Law coefficient calculation processing) The procedure for computing the Fire Service Law coefficient is shown in the flow chart of drawing 27 . First, the amount of possession and the value of the Fire Service Law maximum possession KG are acquired from a possession matter managed table for each [which is held by the storage warehouse for investigation specified on the screen of the Fire Service Law list tab] chemical of every (Step S171). Subsequently, the Fire Service Law coefficient is called for for every matter by carrying out the division of the amount of possession by the Fire Service Law

maximum possession KG (Step S172). And by accumulating the Fire Service Law coefficient for every matter, the total value of the Fire Service Law coefficient of each chemical held by the storage warehouse for investigation is computed, and it is displayed as the "Fire Service Law coefficient sum total" (Step S173).

[0122] In addition, since the Fire Service Law coefficient of each matter is beforehand called for by processing of Steps S171 and S173 when the Fire Service Law coefficient field is established in the possession matter managed table, as mentioned above, it becomes only processing of Step S173 to carry out, when the Fire Service Law list tab is chosen. Moreover, since the value of the Fire Service Law maximum possession KG is managed on the regulation classification code master table, you may make it acquire the value of the Fire Service Law maximum possession KG from a regulation classification code master table from a possession matter managed table.

[0123] The structure for the [4th operation form], next the environmental load management using the above-mentioned weighting value is made to explain as the 4th operation form. In addition, the basic composition of the chemical managerial system of a **** 4 operation form is the same as the 1st operation form.

[0124] First, the basic principle of an environmental load management is explained.

[0125] With this operation form, the environmental load index (the degree of EI) which shows the degree of influence to the environment of each chemical is modeled using the amount of possession of a chemical, and the weighting factor corresponding to the chemical. The value of the weighting factor becomes large like a chemical with large influence of as opposed to environment in the value of a weighting factor. Thus, it becomes possible only by modeling using the weighting factor performing easy calculation of accumulating the product of the amount of possession, and a weighting factor for every matter to grasp an environmental load exactly. Hereafter, the suitable example for realizing this structure is explained.

[0126] (Matter code table) As shown in drawing 28 , corresponding to the matter code, the weighting value (weighting factor) corresponding to the matter is defined as the matter code table which manages the peculiar matter code given to each possession matter. The value of a weighting factor is a peculiar value specified by this system, and the value of the weighting factor becomes large like the large chemical of the influence to environment as mentioned above. The environmental load index (the degree of EI) which shows the degree of influence to the environment of each matter is a value which multiplies the value (toluene :

10000, hydrogen-peroxide:10 grade) of the weighting factor decided for every matter by the amount of possession of the matter, and is calculated.
[0127] (Calculation processing of the degree of EI) The procedure which computes the degree of EI is shown in the flow chart of drawing 29 .
[0128] First, the weighting value of each chemical held by the storage warehouse for investigation is acquired from a matter code table or a possession matter managed table (Step S181). And the amount of possession of each chemical is acquired from a possession matter managed table, and the degree of influence (environmental load index) is computed by the amount of possession and weighting value for every chemical (Step S182). The degree of influence of each chemical is called for by the multiplication of the amount of weighting value x possession. Then, the total value of the degree of influence of each chemical is computed as a degree of EI of the storage warehouse for investigation by accumulating the degree of influence of each chemical (Step S183).
[0129] In addition, you may compute the degree of EI in the group unit by making into one group not only 1 storage warehouse unit but two or more storage warehouses which adjoin, for example and are installed.
[0130] (Display of the degree of EI) If a possession matter list tab is chosen on the operation screen of drawing 30 offered with the user managed software 12, a list indication of the chemical held in the storage warehouse for reference will be given like illustration. The field of "the degree of influence" is prepared on this screen, and the total value of EI of the degree of influence of each chemical computed on the basis of the present amount of chemical possession, i.e., the degree of the storage warehouse for reference, is displayed here. The foreground color of the field of "the degree of influence" changes with the degrees of influence to less than [9000]:green, less than [more than 9000 10000]:yellow, and more than 10000:red. Thus, by a storage warehouse unit estimating the degree of influence to environment, and enabling it to show it numerically, for example, the degree of influence searches 10000 or more storage warehouses, and the employment of it of performing instruction based on environmental preservation international standards, such as ISO 14001, is attained to the manager of the storage warehouse.
[0131] Other functions prepared in the system of function] besides [, next each above-mentioned operation forms 1-4, respectively are explained.
[0132] (Term function manager of a container) This function is a function in which it is used in order to inspect the safety of the container periodically to the chemical held and managed in container units, such as a chemical cylinder. Like a chemical cylinder, about a container to be inspected periodical (maintenance),

as shown in drawing 31 , the storage warehouse name by which it is kept, the container information for a maintenance which shows the kind of container, the maintenance cycle information which shows in how many months it should maintain with 1 time of a period, the information which shows the last maintenance execution time are managed.

[0133] Drawing 32 is the procedure of container term management.

[0134] The maintenance is performing term management of a required container for every storage warehouse using the table of drawing 31 (Step S191), and a system will notify a storage warehouse manager etc. of the storage warehouse which should maintain a container, and its container kind, if the container with which the value which subtracted the last maintenance time from the present time becomes a maintenance cycle is detected (Step S192) (Step S193). In addition, you may make it output a list of the container which corresponds several days before the time which should next maintain to paper etc.

[0135] (Output table conversion function) Generally the chemical codes used for every administration, such as a country, a prefecture, and a city, differ in many cases. Moreover, the chemical code which these administration uses differs also from the chemical code used by this system. An output table conversion function is a function for changing mutually a coding scheme which is mutually different in this way, and performing chemical management and report generation using the specified coding scheme. In order to realize this function, in this system, a matter code correspondence table as shown in drawing 33 is used. This matter code correspondence table holds the correspondence relation between the matter code used by this system, and the matter code used by administration, such as a country, a prefecture, and a city, for every matter. The procedure of output table transform processing using this matter code correspondence table is shown in drawing 34 .

[0136] First, the specification code corresponding to the administration in which a report should be submitted is inputted (Step S201). And the matter code (matter code of this chemical managerial system) of each chemical managed on the possession matter managed table, the history table, etc. is changed into the coding scheme corresponding to the administration specified in specification code using a matter code correspondence table (Step S202). And various total processings are performed using the changed matter code, and creation of the report using the coding scheme specified in specification code is performed (Step S203).

[0137] (Automatic conversion of a unit) As warehousing processing of drawing 3 already explained, this function is a function for changing the units (ml, l, g, kg, Nm3, etc.) of the amount of warehousing mutually, and no matter an input may

be performed in what unit, it can convert it into other units and amounts required for management. The procedure of automatic conversion of this unit is shown in drawing 35 .

[0138] first, the conversion to other units are performed using the unit and amount which were inputted, specific gravity (the case of gas -- a pressure etc.), etc. (Step S211) And the unit and amount which were inputted, and a reduced property (a unit and amount) are registered into a possession matter managed table etc. (Step S212). Thus, by managing the both sides of the unit and amount which were inputted, and a reduced property on a possession matter managed table, it becomes possible to correspond to various total form flexibly.

[0139] (Storage warehouse security function) By using the possession matter list tab of drawing 30 , the user of each part place can search the possession matter of all storage warehouses, and can know what matter is held about the storage warehouse of not only one's part but all other parts. However, when reference free even about the storage warehouse where dangerous matter, such as a toxic material, is held, for example is allowed, there is risk of having said that the matter was used being carried out unjustly. Then, in this chemical managerial system, the storage warehouse security function to prevent from referring to the contents of the possession matter from other parts is prepared about the specific storage warehouse.

[0140] The correspondence relation between the existence of possession of a toxic material and the flag which specifies whether the possession matter reference by the user is allowed is shown for every storage warehouse at drawing 36 . Here, since it usually passes and the reference from other parts is allowed by holding a toxic material about the storage warehouses A and B, since there is nothing, and the toxic material is held about the storage warehouse C, the state where the reference from other parts is forbidden is shown.

[0141] A setup of reference permission / prohibition of a storage warehouse unit is performed by the storage warehouse manager. [such] Hereafter, the interface for it is explained.

[0142] An example of the screen for storage warehouse management (storage warehouse management tab) is shown in drawing 37 . This storage warehouse management tab is for defining storage warehouse information (a storage warehouse code, a storage warehouse name, storage warehouse manager) and its storage warehouse user information (User ID, a user name, etc. of a storage warehouse), and a storage warehouse manager can correct the contents. A click of the "storage warehouse information change" button of this storage warehouse management tab displays the storage warehouse information change dialog

screen of drawing 38 . There is a meaning of each field of this storage warehouse information change dialog screen as follows.

[0143]

< storage warehouse name >: -- < manager name 1>: which inputs a storage warehouse name -- <tele>: which chooses the manager name of representation with a pull down menu -- the extension number of the manager of representation <TEL> which chooses a <manager name 2>:sub manager with a pull down menu: A sub manager's extension number.

[0144] Part public-presentation > besides <: Set up whether this storage warehouse is opened to the user of other parts by possession matter list. Only storage warehouses, such as a toxic material, perform this setup.

[0145] The user of a part besides "open" -- can also see the amount situation of possession.

[0146] Secret ["secret"] -- Only the user of a self-part can do a possession situation.

[0147] <Those who can be used>: Set up the range of the user of an applicable storage warehouse.

[0148] Only "storage warehouse user" -- Warehousing to a storage warehouse and use of a chemical are possible only for the user of an applicable storage warehouse.

[0149] The user of a part besides "all" system user -- can also use the chemical of an applicable storage warehouse.

[0150] <Storage warehouse classification>: Choose a storage warehouse or a recovery matter interim storage warehouse.

[0151] (Bar code input function) A bar code input function is a function which arrived and which gives a bar code for every matter, reads information required for matter management in the bar code automatically, and is registered into a database. Information, such as the above-mentioned environmental discharges rate, such as a matter name and an amount, besides the information for matter discernment, usage, a weighting value (or environmental load index), a kind of corresponding regulation, and the amount of the Fire Service Law maximum possession (or Fire Service Law coefficient), can be included in this bar code. By this, the input by the help is mitigated, it becomes possible to register automatically the parameter for environmental discharge management, safety management, and an environmental load management into a table moreover, and the increase in efficiency of these managements can be attained.

[0152] In addition, although bar code equipment (bar code input unit) can also be installed per storage warehouse, it is formed in the transport devices (for example, truck etc.) for conveying a chemical in consideration of installation

cost, and can be built from the bar code equipment formed in this transport device possible [a wireless input] to the chemical managerial system of this invention. Thus, if the whole system is built, installation of bar code equipment can be made into necessary minimum.

[0153] (Function manager of an un-intentional product) In PRTR, notice [product / un-intentional / which is represented by die OKIN etc.] may be submitted, and it may become the quality of an object.

[0154] The amount rate field of chemical changes which added the resin containing chlorine etc. as quality of a management object, and mentioned it above as management in that case is diverted to some other purpose and managed, or the un-intentional product field can newly be added, it can prepare, and the yield of an un-intentional product can be managed in accordance with the management technique of the above-mentioned operation gestalt.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the composition of the chemical managerial system concerning the 1st operation form of this invention.

[Drawing 2] The block diagram showing the functional composition of the chemical managerial system of this operation form.

[Drawing 3] Drawing showing an example of the warehousing matter registration screen used with the chemical managerial system of this operation form.

[Drawing 4] Drawing showing an example of the move matter registration screen used with the chemical managerial system of this operation form.

[Drawing 5] Drawing showing an example of the use matter registration screen used with the chemical managerial system of this operation form.

[Drawing 6] Drawing showing an example of the tail registration screen used with the chemical managerial system of this operation form.

[Drawing 7] Drawing showing the definition of the amount of managements used with the chemical managerial system of this operation form, and the flow of processing.

[Drawing 8] Drawing for explaining the matter management classification used with the chemical managerial system of this operation form.

[Drawing 9] Drawing for explaining the management unit of the matter in the chemical managerial system of this operation form.

[Drawing 10] Drawing showing an example of the possession matter managed table used with the chemical managerial system of this operation form.

[Drawing 11] Drawing showing an example of the history table used with the chemical managerial system of this operation form.

[Drawing 12] Drawing showing an example of the way table which is used with

the chemical managerial system of this operation gestalt, and to be used.
[Drawing 13] Drawing showing an example of the bills of quantities created by the chemical managerial system of this operation gestalt.
[Drawing 14] The flow chart which shows the procedure of registering an environmental discharge rate into a possession matter managed table in the chemical managerial system of this operation gestalt.
[Drawing 15] The flow chart which shows the procedure of the total processing in the chemical managerial system of this operation gestalt.
[Drawing 16] Drawing showing an example of the impurity coefficient table used with the chemical managerial system of this operation gestalt.
[Drawing 17] The flow chart which shows the 2nd example of the procedure of the total processing in the chemical managerial system of this operation gestalt.
[Drawing 18] Drawing for explaining the field composition of a possession matter managed table required for the realization of a pure-substance function manager prepared in the chemical managerial system concerning the 2nd operation gestalt of this invention.
[Drawing 19] The flow chart which shows the procedure of the component information registration processing in the chemical managerial system of this operation gestalt.
[Drawing 20] Drawing showing an example of the matter registration screen used with the chemical managerial system of this operation gestalt.
[Drawing 21] Drawing showing an example of the component information change screen used with the chemical managerial system of this operation gestalt.

[Drawing 22] Drawing showing an example of the additional component registration screen used with the chemical managerial system of this operation gestalt.
[Drawing 23] The flow chart which shows the procedure of the amount-used calculation processing of the component matter in the chemical managerial system of this operation gestalt.
[Drawing 24] The flow chart which shows the procedure of total processing used with the chemical managerial system of this operation gestalt.
[Drawing 25] Drawing showing the composition of the regulation classification code master table used with the chemical managerial system concerning the 3rd operation gestalt of this invention.
[Drawing 26] Drawing showing an example of the Fire Service Law list screen used with the chemical managerial system of this operation gestalt.

[Drawing 27] The flow chart which shows the procedure of the Fire Service Law coefficient calculation processing in the chemical managerial system of this operation gestalt.
[Drawing 28] Drawing showing an example of the matter code table used with the chemical managerial system concerning the 4th operation gestalt of this invention.
[Drawing 29] The flow chart which shows the procedure of the degree calculation processing of EI in the chemical managerial system of this operation gestalt.
[Drawing 30] Drawing showing an example of the possession matter list screen used with the chemical managerial system of this operation gestalt.
[Drawing 31] Drawing showing the table for the container term management in the chemical managerial system of a **** operation gestalt.
[Drawing 32] The flow chart which shows the procedure of the container term management applied to the chemical managerial system of a **** operation gestalt.
[Drawing 33] Drawing showing an example of the matter code correspondence table established in the chemical managerial system of a **** operation gestalt.
[Drawing 34] The flow chart which shows the procedure of output table transform processing applied to the chemical managerial system of a **** operation gestalt.
[Drawing 35] The flow chart which shows the procedure of unit automatic transform processing applied to the chemical managerial system of a **** operation gestalt.
[Drawing 36] Drawing for explaining the principle of the storage warehouse security function applied to the chemical managerial system of a **** operation form.
[Drawing 37] Drawing showing an example of the storage warehouse management screen used by the storage warehouse security function of drawing 36 .
[Drawing 38] Drawing showing an example of the storage warehouse information change screen used by the storage warehouse security function of drawing 36 .
[Description of Notations]
11 -- Pin center,large administrative software
12 -- Software for user managements
13 -- Arrangements request system

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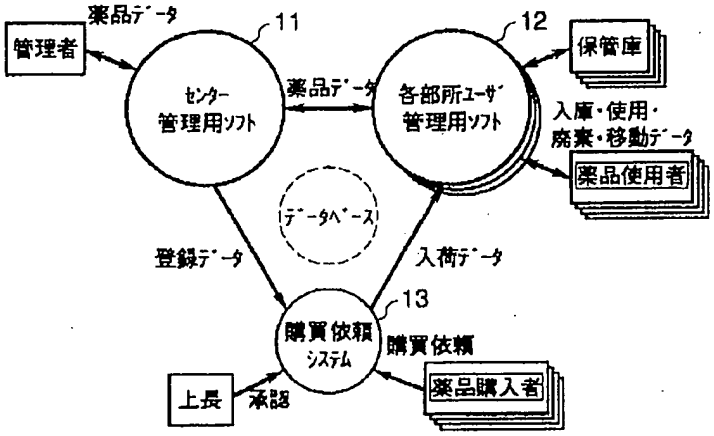
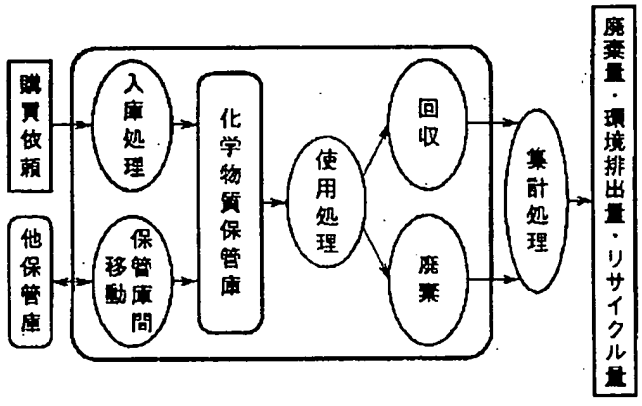
DRAWINGS

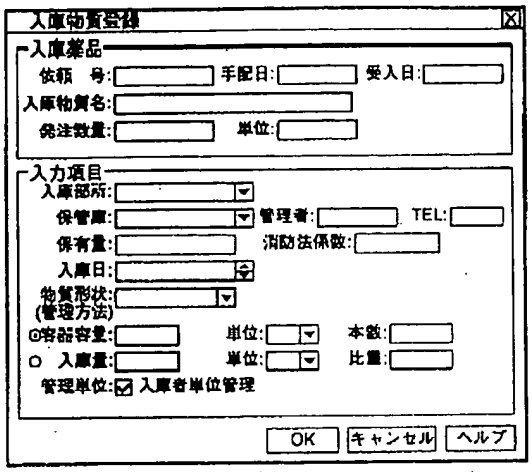
[Drawing 1]



[Drawing 2]

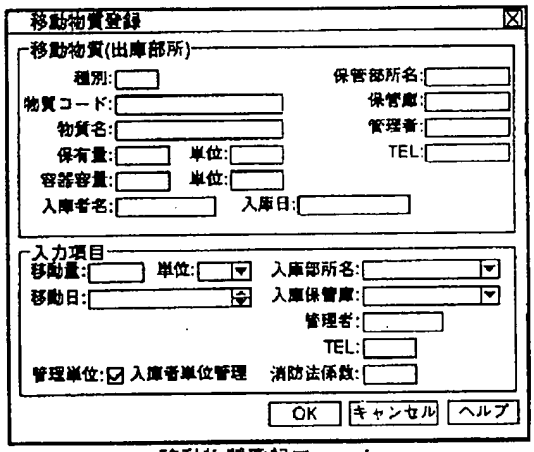


[Drawing 3]



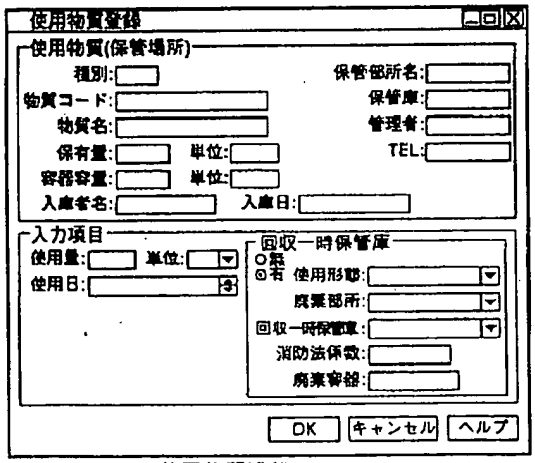
入庫物質登録フォーム

[Drawing 4]



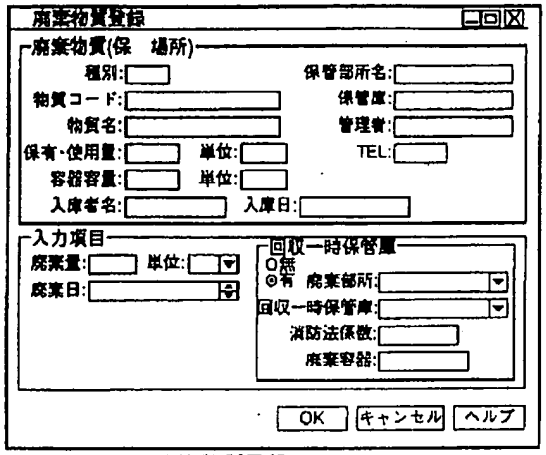
移動物質登録フォーム

[Drawing 5]



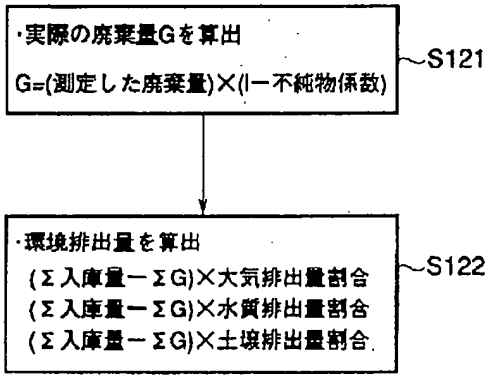
使用物質登録フォーム

[Drawing 6]



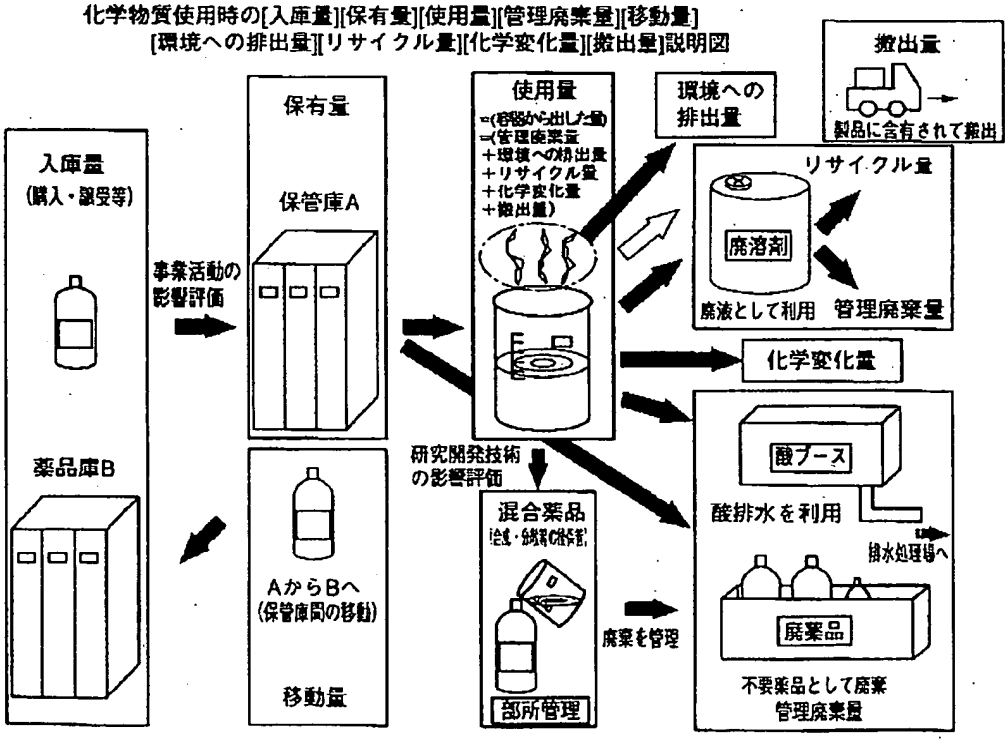
廃棄物質登録フォーム

[Drawing 17]

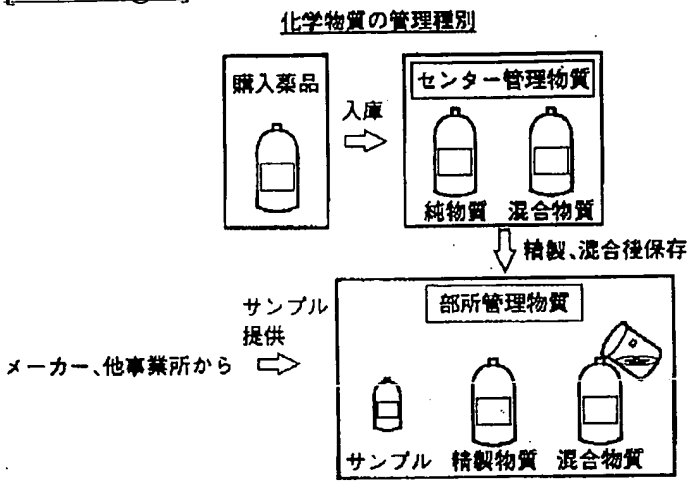


[Drawing 7]

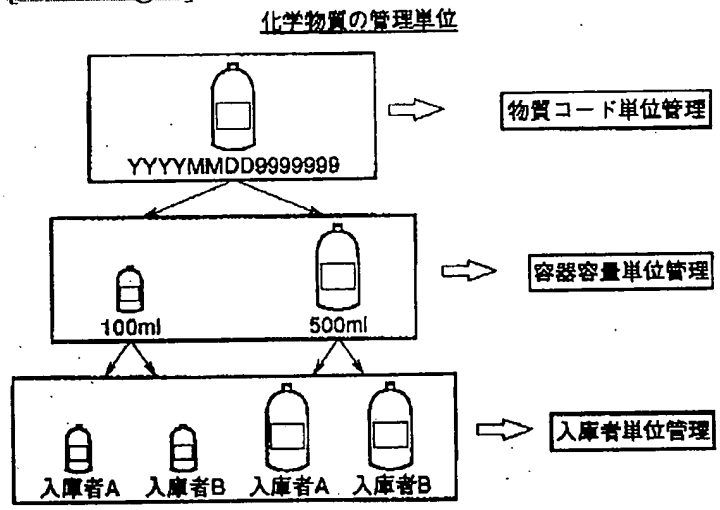
化学物質使用時の[入庫量][保有量][使用量][管理廃棄量][移動量]
[環境への排出量][リサイクル量][化学変化量][搬出量]説明図



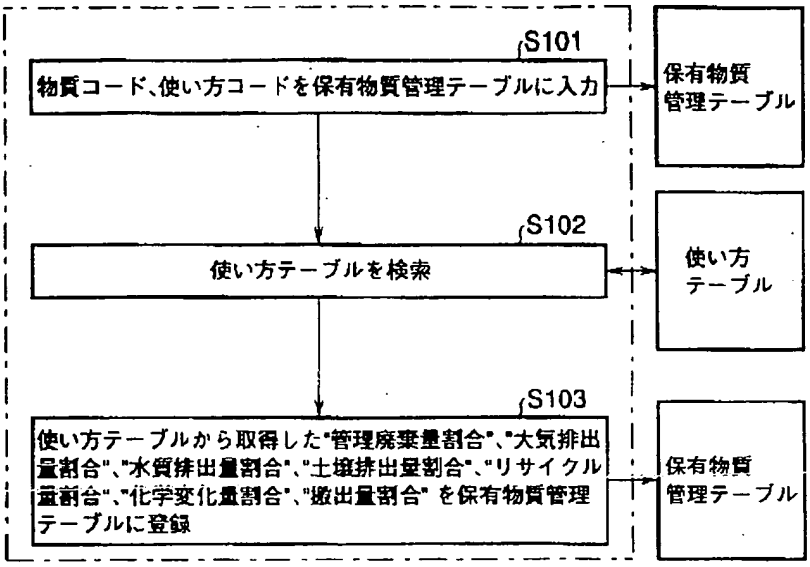
[Drawing 8]



[Drawing 9]



[Drawing 14]

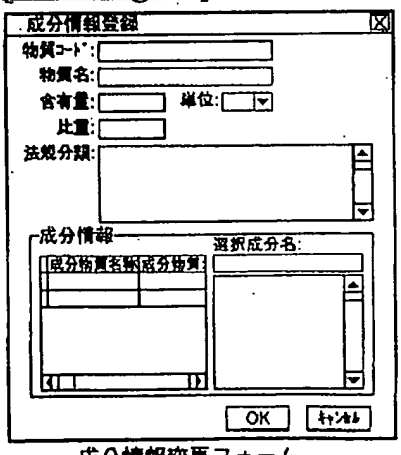


[Drawing 16]

不純物係数ﾃｰﾌﾞﾙ

物質コード	不純物係数	大気排出量割合	水質排出量割合	土壌排出量割合	化学変化量割合	搬出量割合
01	0.4	0.1	0.2	0	0	0
・	・	・	・	・	・	・

[Drawing 21]



成分情報変更フォーム

[Drawing 10]

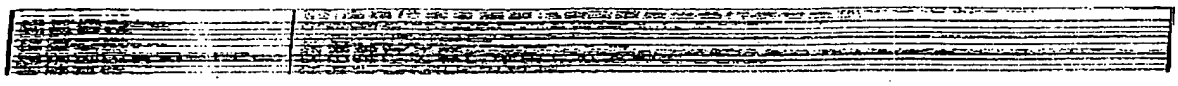
保有物質管理ﾃｰﾌﾞﾙ

ﾌｨｰﾙﾄﾞ名	備考
保管庫ｺｰﾄﾞ	
物質ｺｰﾄﾞ	
ｻﾌﾞ番号	00～99
成分物質ｺｰﾄﾞ	混合物の成分となる物質ｺｰﾄﾞ。 純物質の場合は自分の物質ｺｰﾄﾞを設定
成分ｻﾌﾞ番号	00～99
部所管理ﾌﾗｸﾞ	0：ｾﾝﾀｰ管理物質、1：部所管理物質
物質名称	成分の場合はその成分の物質名称
物質属性	0：純物質・化合物、1：混合物、2：成分
法規分類ｺｰﾄﾞ	
保管庫管理ﾌﾗｸﾞ	0：個人管理、1：保管庫管理
入庫者名	入庫処理を行った人の名前　保管庫管理ﾌﾗｸﾞ="1"の場合はNull
入庫日時	最後に入庫処理を行った日時 保管庫管理ﾌﾗｸﾞ="1"の場合はNull
ﾀｲﾌﾟ	1：液体、2：固体(重さ)、3：固体(長さ)、4：固体(個数)、6：圧縮ｶﾞｽ、 7：液化ｶﾞｽkg管理、8：液化ｶﾞｽm3管理 このﾌｨｰﾙﾄﾞにより使用、廃棄、移動の際に利用できる単位を制御する
利用単位	kg, l, m, 個, Nm3　購入する物質に合わせて選択される
本数	ｶﾞｽﾎﾞﾝﾍﾞの本数
圧力	圧縮ｶﾞｽの初期充填圧力。kg/cm2
濃度	圧縮ｶﾞｽの濃度
保有量	現時点の保有量　入庫処理、薬品使用により増減する
比重	比重。入庫時・移動時に変更可能
ｶﾞｽ換算係数	ｶﾞｽ換算係数
保有量KG	保有量をkgに変換した値。ｶﾞｽの場合はNm3に変換した値
含有量	成分の場合設定。保有量を求める際に使用。 成分の保有量=混合物の保有量×成分の含有量
消防法最大保有KG	物質属性が成分ではないときに設定。消防法の管理対象の場合設定。 対象外はNullを設定。消防法第4類の場合は最大保有量が１(ﾘｯﾄﾙ)で あるが、入庫時に比重(kg/l)×最大保有量(l)で最大保有量(kg)を
管理廃棄量割合	使用後に廃棄庫に廃棄される割合
環境排出量割合(大気)	使用時に大気に排出される割合
環境排出量割合(水)	使用時に水質に排出される割合
環境排出量割合(土壌)	使用時に土壌に排出される割合
化学変化量割合	使用時に化学変化して他の物質に変る割合
ﾘｻｲｸﾙ量割合	使用時にﾘｻｲｸﾙに廻る割合
搬出量割合	製品に含有されて外へ搬出される割合
ｺﾒﾝﾄ	
登録日時	ﾚｺｰﾄﾞが登録された日時
更新日時	ﾚｺｰﾄﾞが更新された日時
使い方ｺｰﾄﾞ	物質の使い方を示すｺｰﾄﾞ
消防法係数	保有量÷消防法最大保有KG
重み付け値	環境負荷指数

[Drawing 11]

履歴ﾃｰﾌﾞﾙ

ﾌｨｰﾙﾄﾞ名	備考
履歴種別	00:その他、 11:入庫による増加、12:移動による増加、13:棚卸による増加、 14:ﾌｧｲﾙ棚卸による増加、17:使用中物質廃棄による増加、 18:使用による増加、19:未使用廃棄による増加、 21:使用による減少、26:ﾘｻｲｸﾙによる減少、 27:使用中物質廃棄による減少、 28:回収による減少、29:未使用廃棄による減少
保管庫ｺｰﾄﾞ	
物質ｺｰﾄﾞ	
ｻﾌﾞ番号	00～99
成分物質ｺｰﾄﾞ	混合物の成分となる物質ｺｰﾄﾞ。 純物質の場合は自分の物質ｺｰﾄﾞを設定
成分ｻﾌﾞ番号	00～99
物質属性	0:純物質・化合物、1:混合物、2:成分
法規分類ｺｰﾄﾞ	
部所管理ﾌﾗｸﾞ	0:ｾﾝﾀｰ管理物質、1:部所管理物質
物質名称	
利用者ID	
利用者名	
ﾀｲﾌﾟ	1:液体、2：固体(重さ)、3:固体(長さ)、 4:固体(個数)、5:ｳｪﾊ、6:ｶﾞｽ このﾌｨｰﾙﾄﾞにより使用、廃棄、移動の際に利用できる単位を制御する
増減量	保有量が減る場合はﾏｲﾅｽ、増える場合はﾌﾟﾗｽの値
利用単位	kg, l, m, 枚, 個
増減本数	ｶﾞｽﾎﾞﾝﾍﾞの本数
比重	比重
ｶﾞｽ換算係数	ｶﾞｽ換算係数
圧力	圧縮ｶﾞｽの初期充填圧力。kg/cm2
濃度	圧縮ｶﾞｽｽの濃度
増減量KG	増減量kg単位に変換した値
含有量	成分の含有量
容器名称	回収容器名称(ﾌｫｰﾑより入力。ｺﾒﾝﾄ程度)
消防法最大保有KG	物質属性が成分ではないときに設定。消防法の管理対象の場合設定。 対象外はNullを設定。消防法第4類の場合は最大保有量が１(ﾘｯﾄﾙ)であるが、入庫時に比重(kg/l)×最大保有量(l)で最大保有量(kg)を求める
管理廃棄量割合	使用後に廃棄庫に廃棄される割合
環境排出量割合(大気)	使用時に大気に排出される割合
環境排出量割合(水)	使用時に水質に排出される割合
環境排出量割合(土壌)	使用時に土壌に排出される割合
化学変化量割合	使用時に化学変化して他の物質に変る割合
ﾘｻｲｸﾙ量割合	使用時にﾘｻｲｸﾙされる割合
搬出量割合	製品に含有されて外へ搬出される割合
ｺﾒﾝﾄ	
ｵﾌﾟｼｮﾝ情報	ｵﾌﾟｼｮﾝで設定する履歴情報
入庫者ID	保有ﾃｰﾌﾞﾙから引継ぎ
入庫者名	保有ﾃｰﾌﾞﾙから引継ぎ
入庫日時	保有ﾃｰﾌﾞﾙから引継ぎ
登録日時	ﾚｺｰﾄﾞを登録した日時
処理日	処理を行った日
消防法係数	保有量÷消防法最大保有KG
重み付け値	環境負荷指数



[Drawing 12]

(使い方コード=nn)

(使い方コード=02)

使い方テーブル(使い方コード=01)

物質コード	管理廃棄量割合	大気排出量割合	水質排出量割合	土壌排出量割合	リサイクル量割合	化学変化量割合	搬出量割合
01	0.9	0.1	0	0	0	0	0
02	0.5	0.2	0.1	0	0	0.2	0
・	・	・	・	・	・	・	・
・	・	・	・	・	・	・	・
・	・	・	・	・	・	・	・
・	・	・	・	・	・	・	・
・	・	・	・	・	・	・	・

[Drawing 13]

集計表

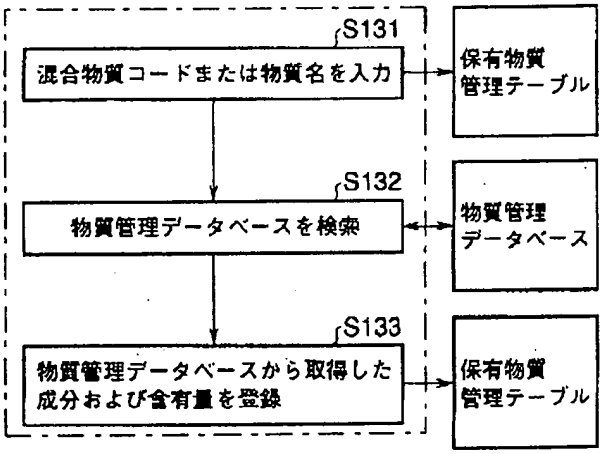
登録NO.	物質コード	物質名	単位	前期在庫量	入庫量	当期在庫量	使用量	管理廃棄量	移動量	リサイクル量	環境排出量			化学変化量	搬出量	備考
											大気排出量	水質排出量	土壌排出量			

[Drawing 18]

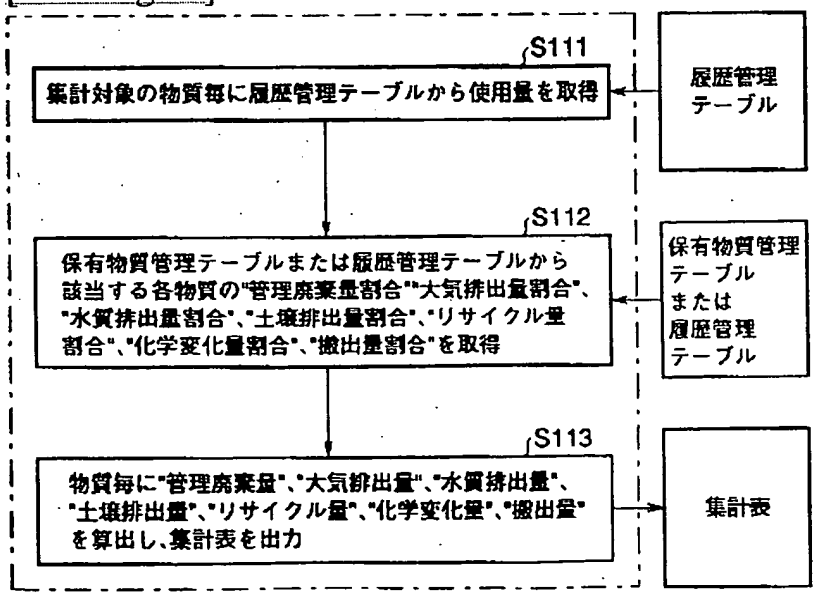
保有物質管理テーブル

	物質コード	サブ番号	成分物質コード	成分サブ番号	物質名称	・・・	含有量
純物質	A1	00	A1	00	エチルアルコール	・・・	1
純物質	A1	01	A1	00	エタノール	・・・	1
混合物	B1	00	B1	00	王水	・・・	
成分	B1	00	C1	00	硝酸	・・・	0.25
成分	B1	00	D1	00	塩酸	・・・	0.75

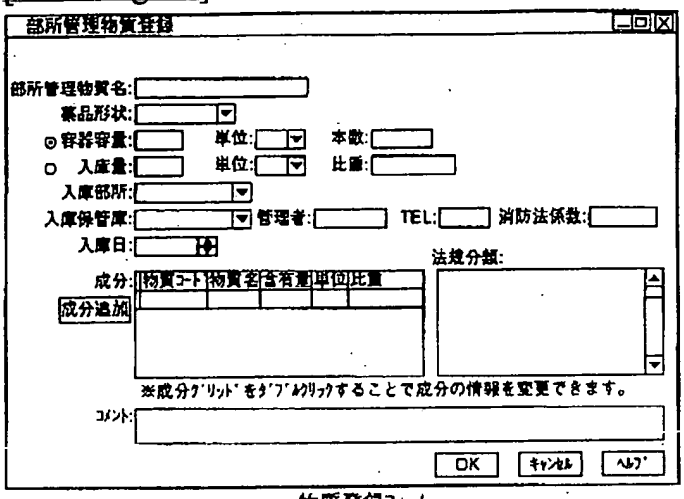
[Drawing 19]



[Drawing 15]

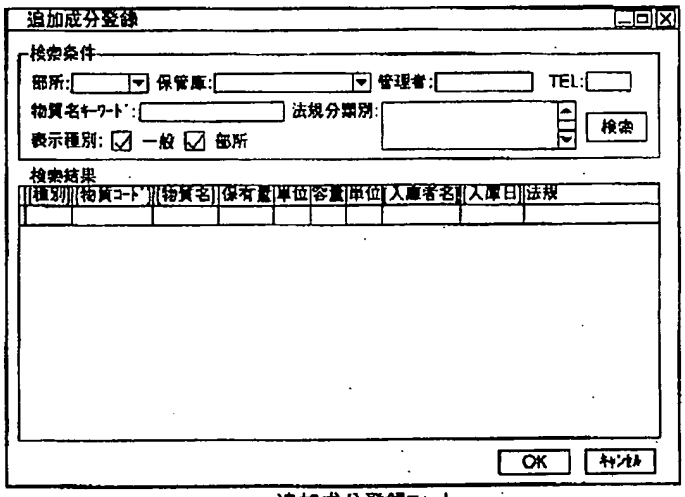


[Drawing 20]



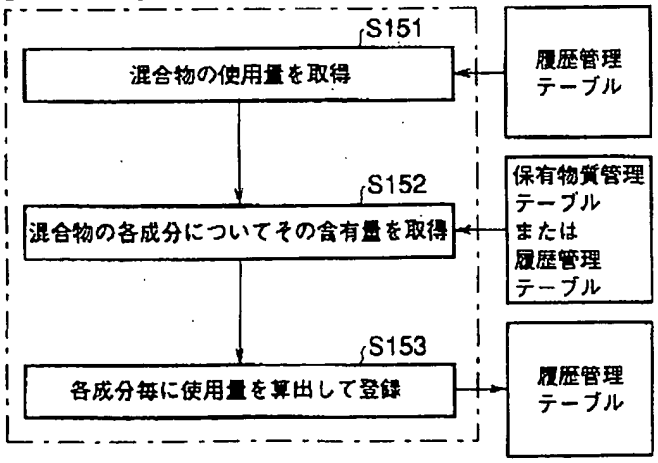
物質登録フォーム

[Drawing 22]

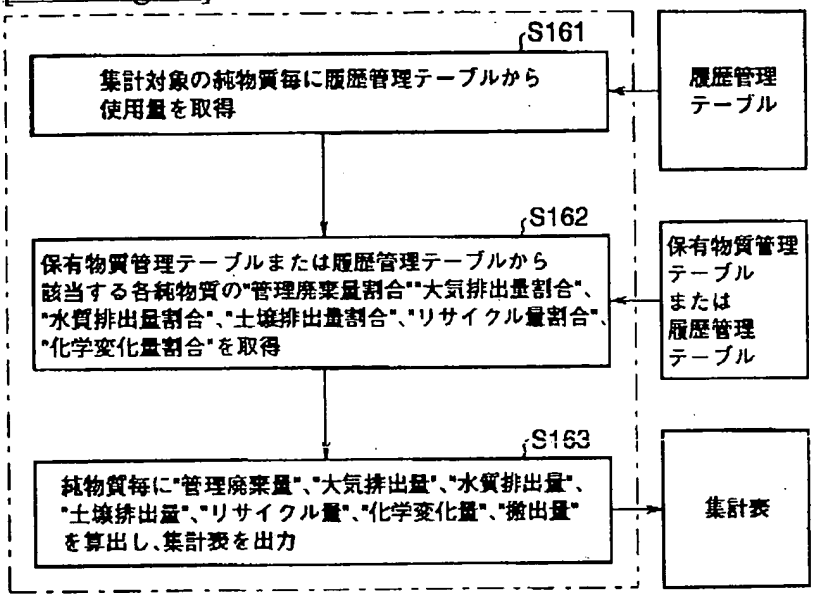


追加成分登録フォーム

[Drawing 23]



[Drawing 24]



[Drawing 28]

物質コードテーブル

物質コード	重み付け値

[Drawing 31]

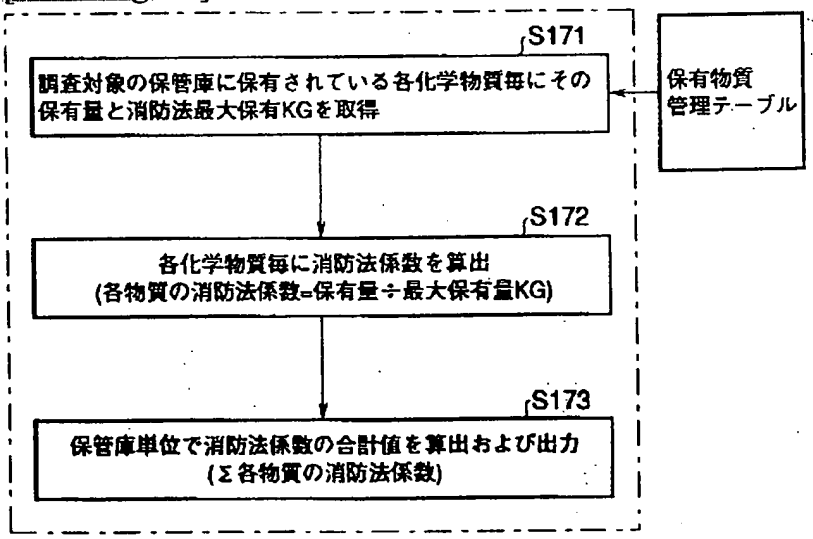
保管庫	メンテナンス対象容器	メンテナンスサイクル	前回メンテナンス実行日時
⋮	⋮	⋮	⋮

[Drawing 25]

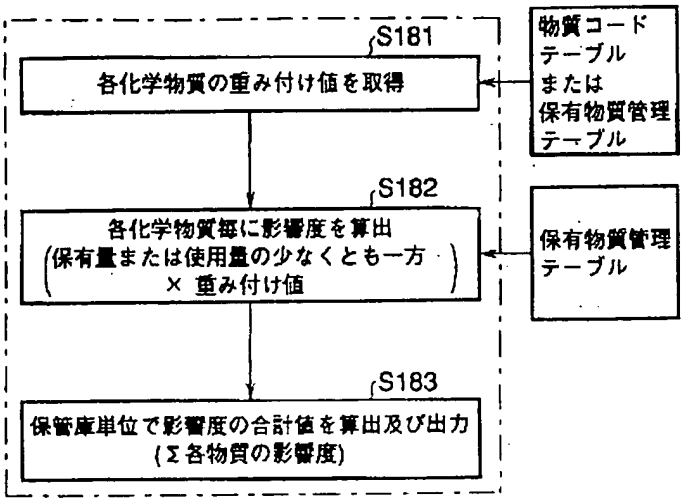
法規分類コードマスタテーブル

法規分類コード	法規分類名	消防法管理区分	消防法最大保有KG	消防法最大保有 l	登録日時	更新日時

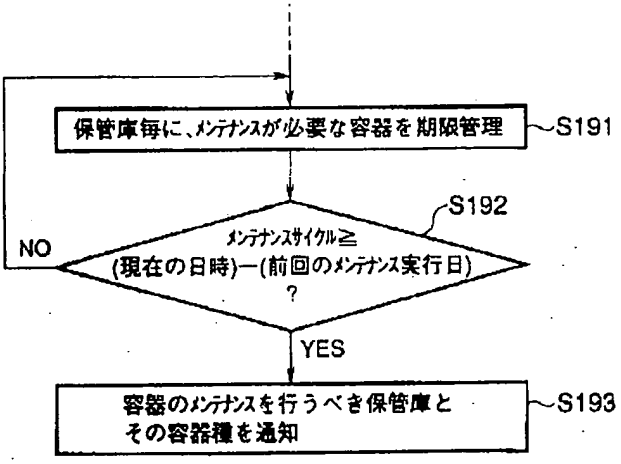
[Drawing 27]



[Drawing 29]



[Drawing 32]

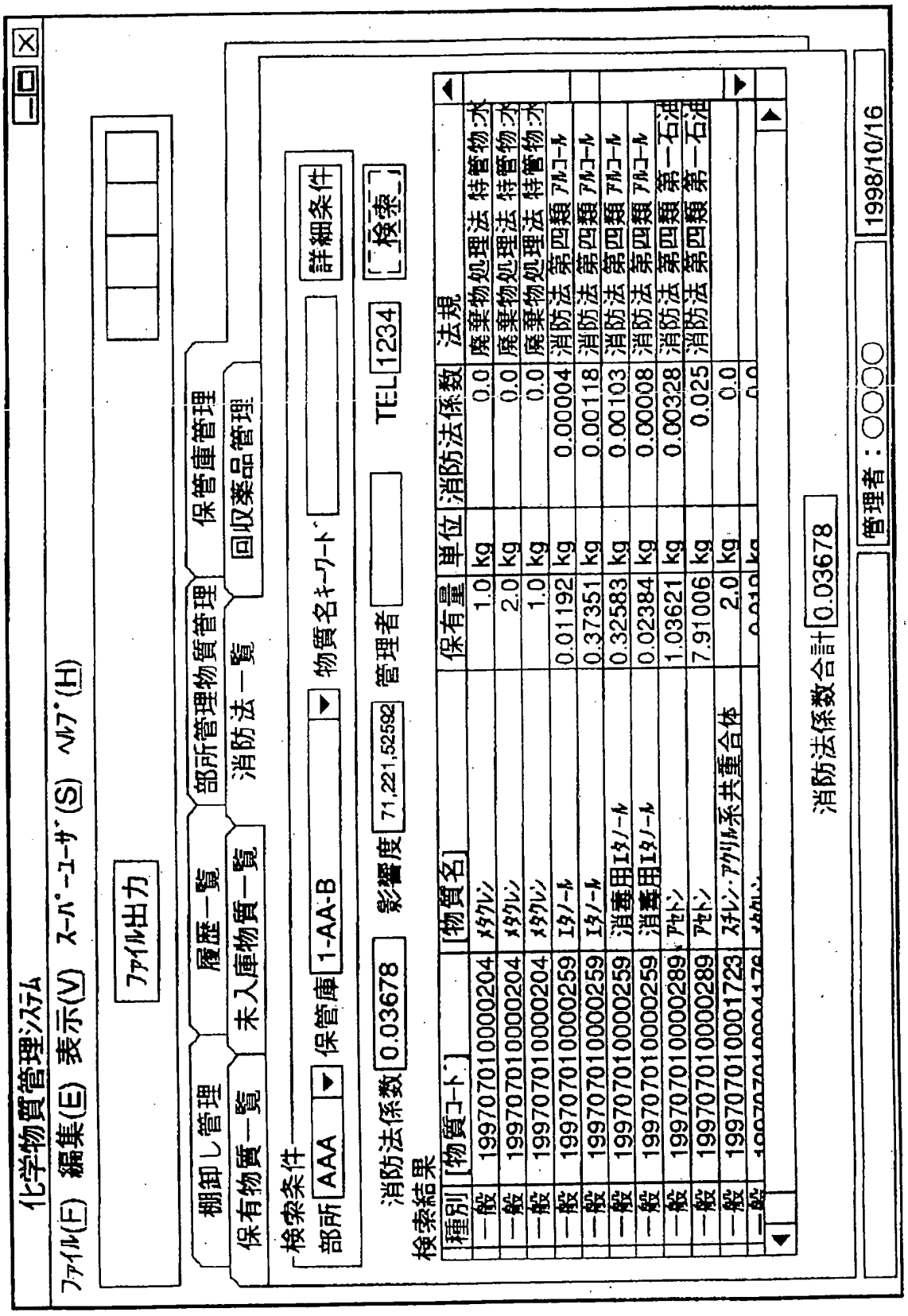


[Drawing 33]

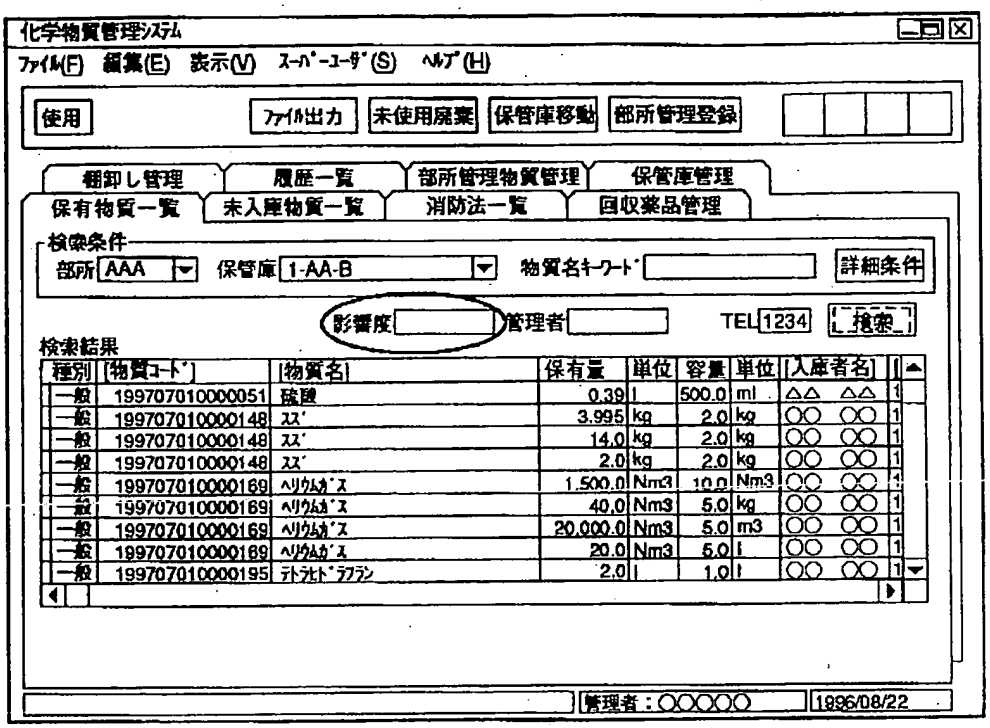
物質コード対応表

本化学物質管理システムの物質コード	行政(県)の物質コード	行政(市)の物質コード	その他で規定された物質コード
⋮	⋮	⋮	⋮

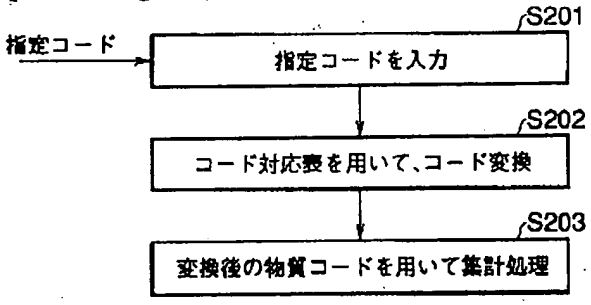
[Drawing 26]


化学物質管理システム
ファイル(F) 編集(E) 表示(V) スーパーユーザ(S) ヘルプ(H)
ファイル出力
棚卸し管理
履歴一覧
部所管理物質管理
保管庫管理
保有物質一覧
未入庫物質一覧
消防法一覧
回収薬品管理
検索条件
部所 AAA
保管庫 1-AA-B
物質名キーワード
詳細条件
消防法係数 0.03678
影響度 71,221,52592
管理者
TEL 1234
検索
検索結果
種別 [物質コード] [物質名] 保有量 単位 消防法係数 法規
一般 1997070100000204 メタクレン 1.0 kg 0.0 廃棄物処理法 特管物:水
一般 1997070100000204 メタクレン 2.0 kg 0.0 廃棄物処理法 特管物:水
一般 1997070100000204 メタクレン 1.0 kg 0.0 廃棄物処理法 特管物:水
一般 1997070100000259 エタノール 0.01192 kg 0.00004 消防法 第四類 アルコール
一般 1997070100000259 エタノール 0.37351 kg 0.00118 消防法 第四類 アルコール
一般 1997070100000259 消毒用エタノール 0.32583 kg 0.00103 消防法 第四類 アルコール
一般 1997070100000259 消毒用エタノール 0.02384 kg 0.00008 消防法 第四類 アルコール
一般 1997070100000289 アセトン 1.03621 kg 0.00328 消防法 第四類 第一石油
一般 1997070100000289 アセトン 7.91006 kg 0.025 消防法 第四類 第一石油
一般 1997070100001723 スチレン・アクリル系共重合体 2.0 kg 0.0
消防法係数合計 0.03678
管理者：○○○○
1998/10/16

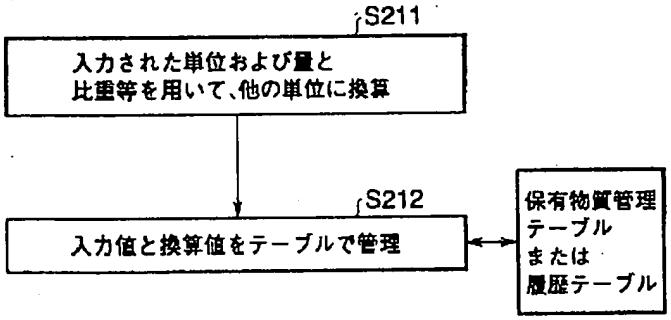
[Drawing 30]



[Drawing 34]



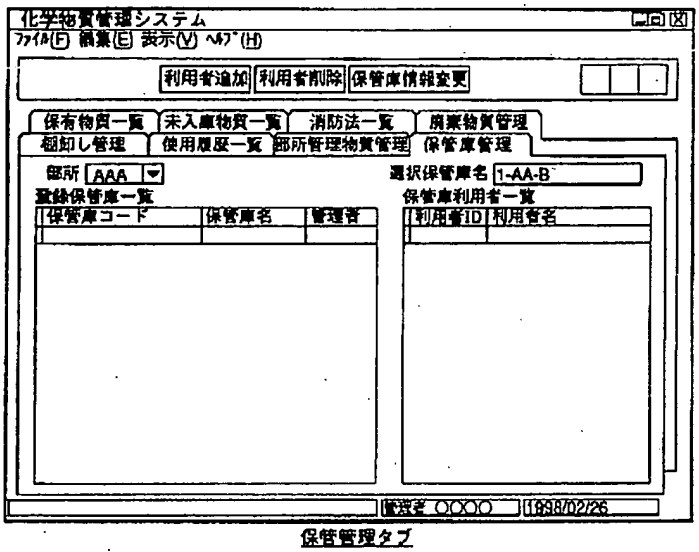
[Drawing 35]



[Drawing 36]

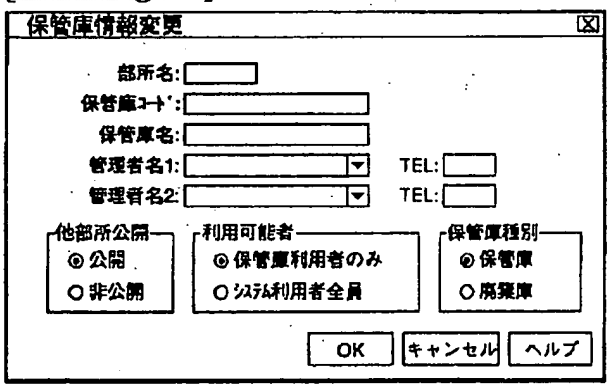
保管庫	有毒物質の有無	ユーザによる保有物質検索
A	無	可
B	無	可
C	有	不可

[Drawing 37]



保管管理タブ

[Drawing 38]



保管庫情報変更フォーム

[Translation done.]